PHYTOLOGIA

An international journal to expedite plant systematic, phytogeographical and ecological publication

Vol. 80 February 1996 No. 2

CONTENTS

Published by Michael J. Warnock
185 Westridge Drive Huntsville, Texas 77340 U.S.A.
PHYTOLOGIA is printed on acid free paper.

PHYTOLOGIA (ISSN 00319430) is published monthly with two volumes per year by Michael J. Warnock, 185 Westridge Drive, Huntsville, TX 77340. Second Class postage paid at Huntsville, TX. Annual domestic individual subscription (12 issues): $40.00. Annual domestic institutional subscription (12 issues): $44.00. Foreign and/or airmail postage extra. Single copy sales: current issue and back issues volume 72 to present: $4.00; back issues (previous to volume 72): $3.00; add $.75 per copy postage and handling US [$1.50 per copy foreign]). Back issue sales by volume: $17.00 per volume 42-71 (not all available as complete volumes); $21.00 per volume 72-present; add $3.00 per volume postage US ($6.00 per volume foreign). POSTMASTER: Send address changes to Phytologia, 185 Westridge Drive, Huntsville, TX 77340-8916.

Phytologia (February 1996) 80(2):73-91

REVISION DE *BOUTELOUA BARBATA* LAGASCA (POACEAE: ERAGROSTIDEAE)

Sandra Esparza Sandoval

Centro Básico, Universidad Autónoma de Aguascalientes, Avenida Universidad s/n, Aguascalientes, Ags., 20100 MEXICO

&

Yolanda Herrera Arrieta

CIIDIR Unidad Durango, Instituto Politécnico Nacional, Apartado Postal 57, Durango, Dgo., C.P. 34000 MEXICO
Becaria de la COFAA

RESUMEN

Se revisan los taxa infraespecíficos de *Bouteloua barbata*; se analizan los caracteres anatómicos en la epidermis abaxial de láminas foliares y en secciones transversales de lámina foliar, vaina y tallo de estos taxa, con el fin de observar las variaciones infraespecíficas. Se reconsideran los caracteres morfológicos que delimitan los taxa y se plantea una clave para la separación de variedades.

PALABRAS CLAVE: *Bouteloua barbata*, Poaceae, anatomía, taxonomía

ABSTRACT

The infraspecific taxa of *Bouteloua barbata* are revised; anatomical features from their leaf abaxial epidermis and transverse sections of leaves, sheaths and culms were analyzed in order to observe the infraspecific anatomical variation. Morphological characters were reconsidered and a key was proposed to separate the varieties of this species.

KEY WORDS: *Bouteloua barbata*, Poaceae, anatomy, taxonomy

INTRODUCCION

El género *Bouteloua* Lagasca se distribuye solo en el continente Americano, especialmente en México, donde 34 de las aproximadamente 40 especies reconocidas se distribuyen a todo lo largo del país. Cuatro especies se distribuyen en Norte y Sud América y solamente *B. megapotamica* Spreng. se restringe a Sud América. *Bouteloua curtipendula* (Michx.) Torr. ha sido introducida a las islas del Hawaii como pasto forrajero por su polimorfismo y agresividad naturales. Ha sido reconocido como uno de los más importantes géneros de las gramíneas, componente de las praderas y planicies del sur de Norte América. No solo debido a que sus especies son elementos significativos de las asociaciones naturales de pastizales, sino que también son las de mayor calidad forrajera en las áreas de pastoreo. Las especies más ampliamente distribuídas y económicamente importantes son *B. curtipendula* (banderilla o triguillo), *B. gracilis* (H.B.K.) Griffiths (navajita), *B. eriopoda* (Torr.) Torr. (navajita negra), y *B. hirsuta* Lag. (navajita peluda).

Las principales contribuciones al conocimiento taxonómico del género son los estudios realizados por: Griffiths (1912), Hitchcock (1913, 1935), Gould (1979), Reeder y Reeder (1980), y Beetle y col. (1987).

Dentro del género *Bouteloua* la especie *B. barbata* Lag. ha sufrido varios cambios y reconsideraciones para delimitar sus variedades. Se le reconocen tres variedades: *B. barbata* var. *barbata*, *B. barbata* var. *rothrockii*, y *B. barbata* var. *sonorae*, cuya distribución va desde el S de Colorado y Utah hacia el sur hasta Guerrero en México. Creciendo en suelos arenosos y áreas de disturbio cercanas al nivel del mar hasta aproximadamente 2550 m (en el caso de la variedad típica).

Bouteloua barbata Lagasca, es posiblemente una de las especies vegetales que mas se le ha prestado atención ya que ha sido descrita por un número considerable de autores, habiendo recibido diversos nombres genérico-específicos, desde el más antiguo *B. barbata*, en Varied. Ci. 2(4):141. 1805.; a las denominaciones posteriores (como se reseña en Gould, 1979): *Actinochloa barbata* (Lag.) Roemer & Schultes, *Syst. Veg.* 2:420. 1817.; *Eutriana barbata* (Lag.) Kunth, en *Rev. Gram.* 1:96. 1829.; *Chondrosium polystachyum* Bentham, en *Bot. Voy. Sulph.* 56. 1844.; *Chondrosium subscorpioides* C. Mueller, en Bot. Zeitung 14:347. 1856.; *Bouteloua pumila* Buckley, en Proc. Acad. Nat. Sci. Philadelphia 93. 1862.; *Erucaria tetrastachya* Cerv., en Naturaliza 1:349. 1870.; *Chondrosium exile* Fournier, en *Mex. Pl. Gram.* 2:137. 1886.; *Chondrosium microstachyum* Fournier, en *Mex. Pl. Gram.* 2:138. 1886.; *Bouteloua microstachya* (Fourn.) L.H. Dewey, en Contr. U.S. Natl. Herb. 2:531. 1894.; *Bouteloua arenosa* Vasey, en U.S.D.A. Div. Bot. Bull. 12(1): pl. 34. 1890.; *Bouteloua micrantha* Scribner & Merrill, en U.S.D.A. Div. Agrostol. Circ. 32:8. 1901.

Bouteloua barbata Lag. var. *rothrockii* (Vasey) Gould, en Ann. Missouri Bot. Gard. 66:403. 1979. Fué inicialmente descrita como *B. polystachya major* Vasey, en Wheeler, *Rep. U.S. Surv. 100th Merid.* 6:287. 1878.; posteriormente reconocida como *B. rothrockii* Vasey, en *Grasses U.S.* 33. 1883.; como *B. micrantha* Scribner & Merrill, en U.S. Dept. Agr. Div. Agrost. Circ. 32:8. 1901.; y más tarde como *B. barbata* var. *major* (Vasey) Beetle, y col., en SARH-COTECOCA II:63. 1987.

Bouteloua barbata Lag. var. *sonorae* (Griffiths) Gould, en Ann. Missouri Bot. Gard. 66:403. 1979. Fué promero descrita como *Bouteloua sonorae* Griffiths, en Contr. U.S. Natl. Herb. 14:389. 1912.

Los resultados que aquí se reportan fueron generados como parte del proyecto general "Estudio biosistemático de las gramíneas de importancia forrajera en México", que se lleva a cabo en el CIIDIR Unidad Durango, en colaboración con el personal del Herbario de la Universidad Autónoma de Aguascalientes.

MATERIALES Y METODOS

Se utilizaron ejemplares de *Bouteloua barbata* tanto de material fresco colectado especialmente para este estudio, como de ejemplares de herbario obtenidos en préstamo. Los ejemplares revisados para complementar el estudio provinieron de los siguientes herbarios mexicanos: ANSM, CIIDIR, ENCB, HUAA, IEB, IBUG, MEXU, SLPM, y UAG; así como del US, de EUA.

La metodología que se empleó en el estudio morfológico es aquella propuesta por Lott y Chiang (1990), que se utiliza regularmente en los estudios florísticos, para llevar cabo las descripciones de los taxa y la clave de separación de variedades.

Para el estudio anatómico se utilizaron muestras colectadas en fresco (Cuadro 1), fijadas en Formalina-Ac. acético-Alcohol (FAA), seleccionando el tercio medio de láminas foliares maduras, los tallos de la parte central cercana al nudo, la vaina que los cubre en la porción superior en cada ejemplar en fresco. Los cortes fijos en FAA fueron sometidas a deshidratación en series de etanol siguiendo la metodología propuesta por Berlyn y Miksche (1976). Se hicieron cortes de 10 a 12 micras de espesor y se tiñieron con safranina al 1% durante 45 min, luego con verde de malaquita al 0.2% cubriendo la laminilla con este colorante y lavandola casi inmediatamente. Las muestras se suavizaron con una solución 0.1 glycerina-etanol-agua antes de ser examinadas con un microscopio de contraste de fases y a un aumento de 40×. Las muestras tomadas de ejemplares de herbario fueron rehidratados en agua caliente y ablandados con KOH al 5%, y los cortes transversales de tallo, vaina y lámina foliar fueron hechos en fresco con una navaja de rasurar, sin tinción. Las descripciones anatómicas se llevarón a cabo siguiendo el sistema propuesto por Ellis (1976). De forma complementaria se llevó a cabo la descripción anatómica de epidermis con base en el método estandarizado de Ellis (1979).

DESCRIPCIONES ANATOMICAS

Lámina foliar en sección transversal.

Lámina en corte transversal generalmente muy abierta, en forma de V, con ángulos menores a 30°, brazos rectos y simétricos, de 0.1 a 0.15 mm de espesor; márgenes

profundamente ondulados, 1/4 o más del grosor de la lámina en ambas superficies. Hv primarios (HvI°) y Hv secundarios (HvII°) presentes, dispuestos centralmente en la lámina, subiguales, de forma circular a triangular-ovados en la var. *sonorae*, 3 a 5(-7) HvI°. HvII° intercalados en pares entre los HvI°, (3 HvII° entre cada HvI° en la var. *rothrockii*). HvI° con una vaina compuesta por 10 a 11 células Kranz (cK), interrumpidas abaxialmente por una viga de esclerénquima; una vaina interna de mestoma que rodea al haz vascular; células del floema esclerosadas; xilema con 2 vasos metaxilemáticos adyacentes al floema y con 1 a 2 vasos protoxilemáticos (1 en la var. *rothrockii*), de paredes engrosado-angulosas. HvII° ininterrumpidos, con una vaina de 8 a 10 cK y una vaina interna de mestoma que rodea al xilema y floema. Esclerénquima presente a manera de vigas angostas adaxial y abaxialmente en los HvI° y HvII°, y en los márgenes estrechos de proyección ligeramente puntiaguda. Células del clorénquima en una sola hilera, rodeando cada Hv, y separadas por 1 o 2 hileras de células del parénquima esponjoso. Células buliformes en forma de abanico presentes en la unión adaxial de los Hvs. Epidermis adaxial y abaxial unicelular, adaxialmente con tricomas unicelulares cortos de base no bulbosa, unicuspidales a bicuspidales en la var. *sonorae*; papilas unicelulares, pequeñas, redondeadas a ovadas, infladas. Abaxialmente con micropelos bicelulares y con ganchos cortos en las vars. *rothrockii* y *sonorae* (Figura 1).

Tallo en seccion transversal.

Corte transversal obloide, con bordes ondulados a lisos en la var. *sonorae*, sin pubescencia o con pubescencia en la var. *rothrockii*. Anillo de esclerénquima interrumpido por haces vasculares secundarios (HvII°) periféricos; HvII° con una vaina de clorénquima radial constriñido en su porción media por una viga de esclerénquima subepidérmico, seguida de una vaina de 5 células Kranz (cK), semicirculares; 9 a 10 HvII° dispuestos en las crestas, en forma alterna con los HvI° internos. Anillo de esclerénquima multiestratificado, ocupando aproximadamente 2/5 partes de la superficie total. HvI° interiores en un solo nivel del círculo, bordeados en su parte superior por el anillo de esclerénquima; adicionalmente la var. *rothrockii* presenta un anillo de HvI° mucho más pequeños, alternos a los grandes e inmersos hasta la mitad de su superficie en el anillo de esclerénquima, mientras que la var. *sonorae* presenta 2 HvI° inmersos en el parénquima central del tallo; HvI° ovalados con 3 vasos metaxilemáticos (2 laterales externos, grandes y 1 central interno, pequeño). Parénquima continuo hasta el centro, aproximadamente 3/5 partes de la superficie total (Figura 2).

Sección transversal de estolón en *Bouteloa barbata* Lag. var. *sonorae* (Griffiths) Gould.

Corte transversal obloide con bordes lisos, sin pubescencia. Anillo de parénquima subepidérmico ocupando aproximadamente 1/4 parte de la superficie total, interrumpido por HvII° periféricos. HvII° con una vaina de clorénquima radial

constriñida en su porción media por una viga de esclerénquima subepidérmico, en seguida una vaina de 5 cK, colocadas en un semicírculo, rodeando el HvII°; HvII° alternos a los 9 o 10 HvI° del primer anillo. Anillo de esclerénquima adyacente al parénquima subepidérmico, ocupando 1/4 de la superficie total, interrumpido por los HvI°'s que estan inmersos casi totalmente en la banda de esclerénquima, ovalados, alternos con los HvI° de un segundo anillo interno, con 2 a 4 vasos metaxilemáticos; HvI° del segundo anillo semejantes a los HvI° del primer anillo, inmersos en el parénquima central. Parénquima central ocupa aproximadamente la 1/2 de la superficie total (Figura 2).

CUADRO 1. Ejemplares utilizados en las descripciones anatómicas

---

Bouteloua barbata Lag. var. *barbata*

Aguascalientes: *M. de la Cerda 3225, 3273, 3807, 3829, 4168, 4203* (HUAA); *M. Siqueiros 2478* (HUAA); *Plan Lerma 1117* (HUAA); *J.R. Reeder & C.G. Reeder 1325* (MEXU). Durango: *S. González y S. Acevedo 2508* (CIIDIR); *Y. Herrera 319* (CIIDIR); *Y. Herrera 1347, 1350* (CIIDIR-HUAA). Hidalgo: *R. Hdz. Magaña 6677* (ENCB, MEXU); *J.R. Reeder, C.G. Reeder, & L.N. Goodding 1621* (ENCB); *I. Díaz, J. Vilchis, y A. Díaz 350* (MEXU). San Luis Potosí: *J. Rzedowski 4211*; *J.L. Jiménez s/n* (SLPM); *Rodarte s/n* (SLPM); *A. Gómez-Glz. s/n*; *F. Miranda 8918* (MEXU); *C.D. Orcutt 5437* (MEXU); *Schaffner 1020* (MEXU). Sinaloa: *F.W. Gould 12116* (ANSM). Sonora: *Y. Herrera y M. Siqueiros 1322, 1326, 1328, 1330, 1332* (CIIDIR-HUAA); *R.S. Felger 85-949* (IEB); *R.S. Felger 14971* (IEB,ENCB, MEXU).

Bouteloua barbata Lag. var. *rothrockii* (Vasey) Gould

Sinaloa: *Y. Herrera y M. Siqueiros 1313, 1316* (CIIDIR-HUAA); *R. McVaugh 1439* (IEB); *H.H. LeRoy 8772* (ENCB); *H.S. Gentry 14338* (MEXU). Sonora: *W.R. Anderson 12547* (MEXU).

Bouteloua barbata Lag. var. *sonorae* (Griffiths) Gould

Sinaloa: *Y. Herrera y M. Siqueiros 1309* (CIIDIR-HUAA).

Vaina foliar en sección transversal.

Vaina en corte transversal en forma de U, borde abaxial ondulado. Epidermis sin tricomas en la var. *rothrockii*, con tricomas unicelulares cortos de base no bulbosa,

unicuspidales y papilas unicelulares, pequeñas ovadas de pared delgada, intercalados a lo largo de la epidermis abaxial y adaxial en la var. *sonorae* y solo en la epidermis abaxial en la variedad típica. Esclerénquima subepidérmico continuo en el borde abaxial a lo largo de la vaina hasta los márgenes, a discontinuo por los haces vasculares (Hv) en la var. *rothrockii*. Hv dispuestos abaxialmente en un mismo nivel. HvI° y HvII° presentes, intercalados 1:1 en la var. *barbata*, 1:2-3 en la var. *rothrockii*, y 1:3 en la var. *sonorae*, HvI°'s obloides a semicirculares, con una vaina de clorénquima radial seguida de una vaina de 3 a 4 células Kranz (cK) a cada lado (2 en la var. *rothrockii*), interrumpidas adaxialmente por parénquima y abaxialmente por una viga de esclerénquima; con una vaina de mestoma interna que rodea el floema y xilema; con 2 vasos metaxilemáticos, 1 a cada lado de la porción superior (3 vasos en la var. *sonorae*, el tercero central). HvII° semicirculares a obloides en la var. *sonorae*; con una vaina de clorénquima radial seguida de una vaina de 2 cK a cada lado en la var. *rothrockii*, de 3 cK a cada lado en la var. típica y de 8 cK en la var. *sonorae*; interrumpidas adaxialmente por parénquima y abaxialmente por una viga de esclerénquima, en las vars. *barbata* y *rothrockii*, a ininterrumpidas en la var. *sonorae* (Figura 3).

Epidermis foliar en vista abaxial.

Epidermis vista abaxialmente (envés), con zona costal e intercostal presentes. Zona intercostal constituida por bandas estomáticas (Be), bandas de células intercostales largas (Bil), con células intercostales cortas y micropelos (Bilcm), y con ganchos cortos (Bilg). En algunas células intercostales se observan papilas. Arreglo de la distribución entre los diferentes tipos de bandas, partiendo de la unión costal 1(Bilg) -1(Be) -1(Bil) -1(Bilcm) -1(Bil) -1(Be) -1(Bilg). Células intercostales largas 3 veces o más largas que anchas, rectangulares, paredes moderadamente engrosadas, con ondulaciones profundas en forma de U en las vars. *barbata* y *rothrockii* a ligeramente onduladas en la var. *sonorae*. En Bilg, células intercostales largas con ganchos cortos intercalados irregularmente entre ellas. En Bilcm, cada célula intercostal larga separada por una célula intercostal corta (1 a 2 en la var. *sonorae*). En Bilc, células intercostales cortas, igual de altas que células intercostales largas pero muy estrechas, no silificadas. Micropelos bicelulares, emergiendo de la base de las células intercostales cortas, no formando ángulo con la base; célula basal ligeramente más larga que distal, más larga que ancha, de base bulbosa; célula distal algo más corta que basal, inflada con ápice ahusado. Ganchos presentes en las vars. *rothrockii* y *sonorae*, de base igual a ligeramente más corta que los estomas, con la punta encorvada, corta, intercalados de manera discontinua en las células intercostales largas, adyacentes a la zona costal. Papilas redondeadas, circulares (en forma de media luna en la variedad típica), grandes, las mayores 1/2 de la anchura vertical de las células intercostales largas, infladas, pared engrosada, comunmente elongadas, con el ápice cóncavo, distribuidas en al menos del 50% de las células intercostales largas, distalmente, una papila por célula. Estomas elipsoides en forma de domo bajo ovoide; células subsidiarias anexas alargadas y algo constreñidas en su parte media. Células interestomales presentes en bandas estomáticas, intercaladas entre los estomas, rectangulares a romboides en la var. *sonorae*, 2 a 3 veces más largas que anchas, de paredes ligeramente engrosadas, con ondulaciones profundas en forma de U a ligeramente onduladas en la var. *sonorae*, con extremos cóncavos. Zona costal

constituida por bandas de células costales largas (Bcl) y bandas de células costales cortas y de sílice (Bccs); células costales largas, tan largas como las intercostales largas pero 3 veces menos anchas que éstas; células costales cortas rectangulares a cuadradas, de paredes sinuosas, alternando 1 célula costal corta con 1 célula de sílice (1 a 2 en la var. *sonorae*); cuerpos de sílice en forma de silla de montar, desiguales en longitud a las células cortas, de paredes lisas, de bordes ligeramente redondeados. Células de corcho raras a escasas en la var. *sonorae*, presentes en menos del 25% de la superficie (Figura 4).

TRATAMIENTO SISTEMATICO

Bouteloua barbata Lagasca, Varied. Ci. 2(4):141. 1805.

Planta anual o perenne, tallos decumbentes y abiertos o erguidos y amacollados, a veces formando estolones hasta de 50 cm de largo, muy variable en aspecto y tamaño, dependiendo de su hábitat y grado de desarrollo. Raices fibrosas por lo regular delicadas. Tallo generalmente ramificado en el segundo nudo. Hojas persistentes, principalmente basales. Vainas por lo general cortas, con mechones de pelos largos en cada lado del collar. Lígula siempre presente en forma de un anillo de pelos o membrana corta, de 0.5 mm de longitud. Láminas foliares de 0.5 a 7 (-13) cm de longitud y de 1 a 3 (-4) mm de ancho, acuminadas en el ápice, a menudo escabroso-pilosas a esparcido estrigosas en la superficie adaxial. Inflorescencia de espigas purpúreas, persistentes, cortamente pediceladas, no ramificadas, pectinadas, ligeramente curveadas (navajitas), con (2-) 4 a 8 (-12) espigas por tallo, de 1 a 2.5 cm de longitud, de 1 a 5 mm de ancho, con (20-) 25 a 40 (-55) espiguillas por espiga, sobre un raquis plano, glabro a diminuto escabroso, a veces presenta pelos de base papilar. Espiguillas de 2.5 a 4 mm longitud, incluyendo las aristas cortas, por lo general con dos rudimentos arriba de la flor perfecta. Glumas glabras, desiguales, ovado-lanceoladas, acuminadas o ligeramente emarginadas y mucronadas; primera gluma de 1 a 1.5 mm de longitud, por lo general hialina; segunda gluma de 2.5 mm de longitud, por lo general purpúrea, en ocasiones presenta pelos de base papilar. Raquilla con un mechón de pelos abajo del rudimento aristado. Lema de la flor perfecta de 2.5 a 3 mm de longitud, densamente pubescente al menos en los márgenes, trilobada, triaristada, aristas de 0.5 a 3 mm de longitud, vilosa en la cara externa. Pálea de 2 a 2.8 mm de longitud, biaristada, vilosa en la cara externa. Flores rudimentarias 2, rudimento inferior con lóbulos redondeados, triaristados, aristas casi tan largas como aquellas de la lema, con un anillo de pelos en el estípite corto, de 1 mm de longitud; rudimento superior pequeño, sin aristas, en forma de abanico. Anteras rojizas a anaranjadas. Cariópsis obovada, apiculada en la base, de casi 1 mm de longitud.

Habitat: Matorrales de zonas áridas y semiáridas, bosque de encino, pastizales y zonas de disturbio, selva baja caducifolia en suelo gravoso y/o arenoso, costas y playas arenosas. Se le encuentra desde altitudes cercanas al nivel del mar hasta los 2550 m (solo la var. *barbata*).

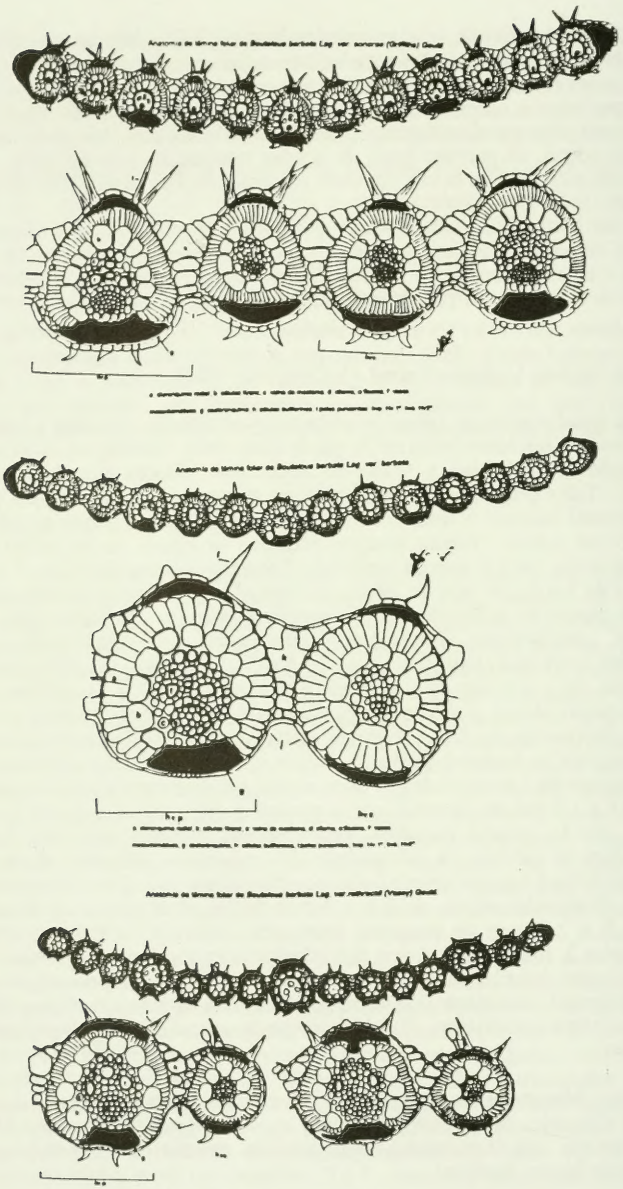


Figura 1.

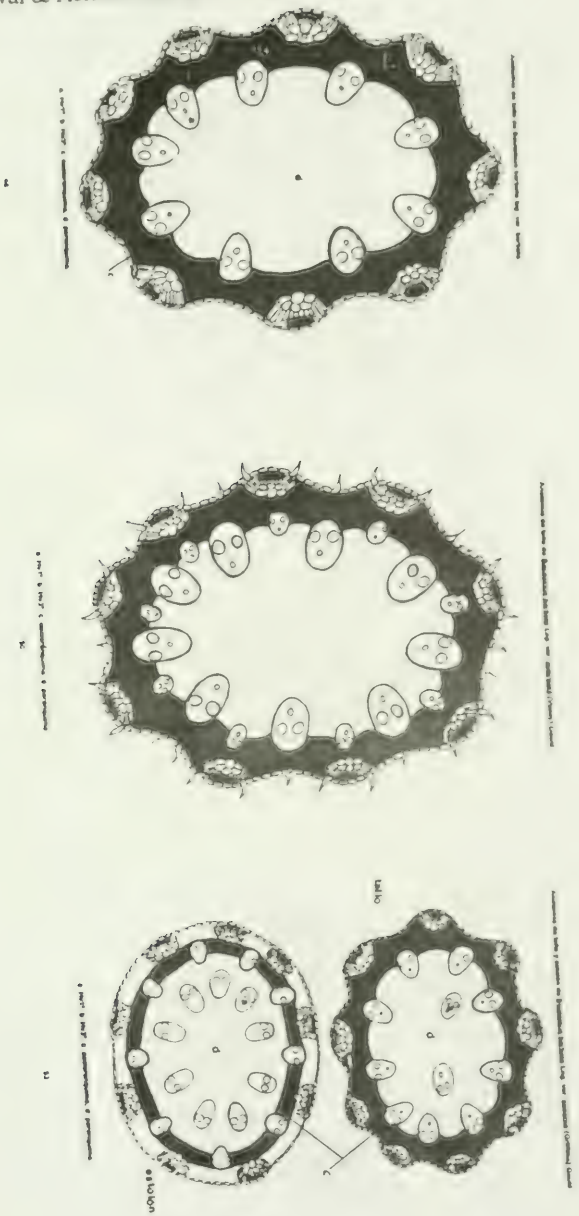


Figura 2.

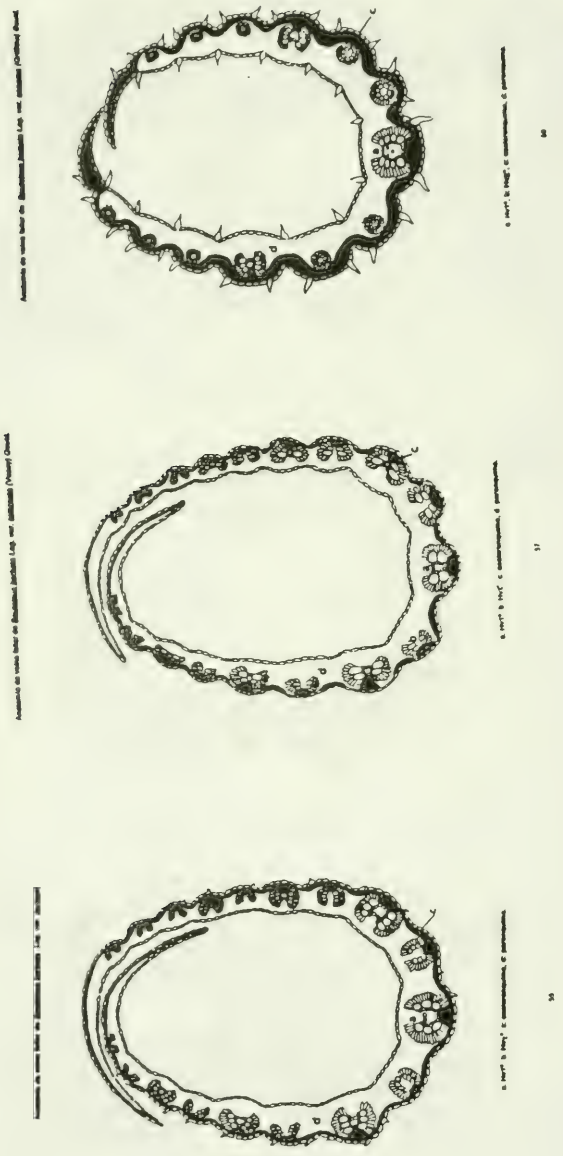


Figura 3.

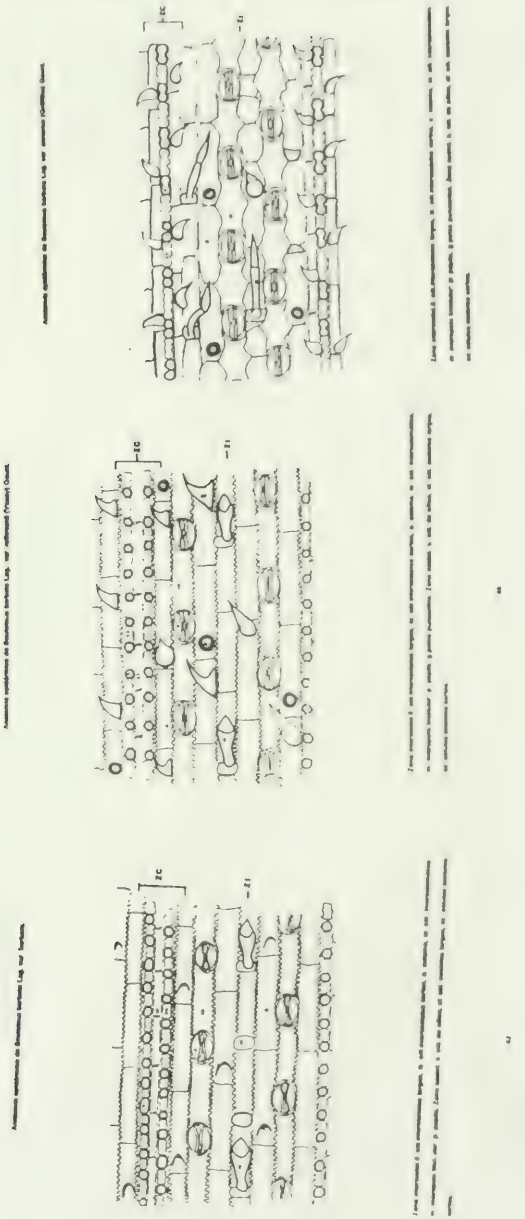


Figura 4.

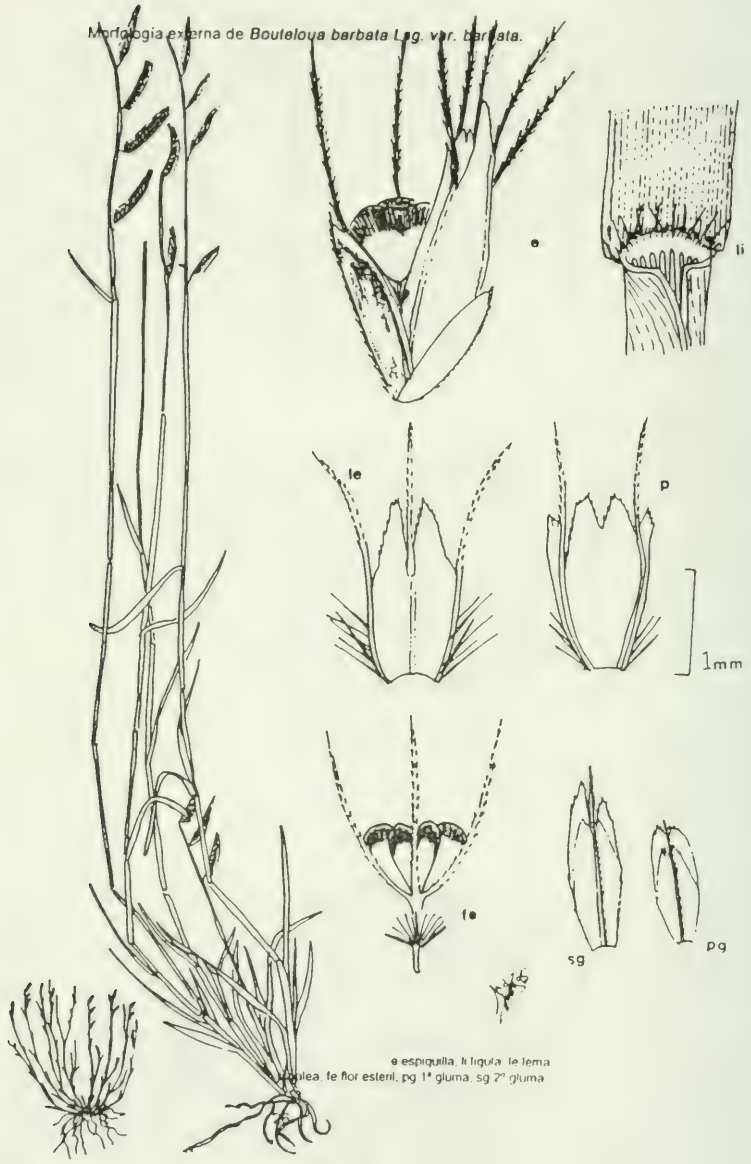
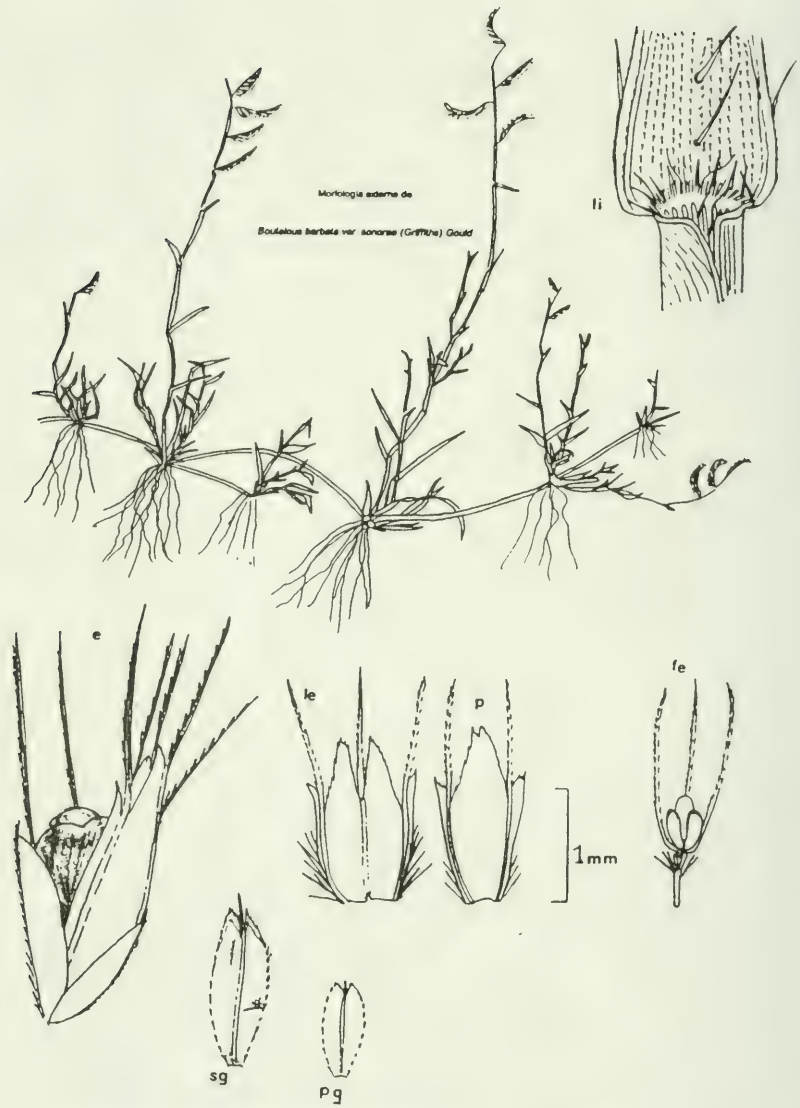

Morfología externa de Bouteloua barbata Lag. var. barbata.
e
li
le
p
1mm
fe
sg
pg
e espiguilla, li lígula, le lema
p palea, fe flor estéril, pg 1ª gluma, sg 2ª gluma

Figura 5.


e
Morfología esquemática de
Bouteloua barbata var. rothrockii (Vasey) Gould
le
1 cm
li
p
sg
pg
e espiguilla, l ligula, le lema, p palea, fe flor estéril, pg 1ª gluma, sg 2ª gluma

Figura 6.



e:espiguilla; i: lígula, le: lema, p:palea, fe: flor estéril, pg: 1° gluma, sg: 2ª gluma

Figura 7.

Distribución: Aguascalientes, Baja California Norte y Sur, Coahuila, Colima, Chihuahua, Durango, Guanajuato, Guerrero, Hidalgo, Jalisco, México, Nuevo León, Puebla, Querétaro, San Luis Potosí, Sinaloa, Sonora, y Zacatecas.

1. Plantas que desarrollan claramente estolones, perennes. Láminas foliares cortas de 0.5 a 4 cm de longitud. Espigas 2 a 4 por tallo. Pálea entera en su porción central, glabra; porciones laterales glabras a escaso pilosas en el ápice..... var. *sonorae*
1. Plantas que no desarrollan estolones claramente, anuales o perennes. Láminas foliares de (0.5-) 6 a 9 (-13) cm de longitud. Espigas 4 a 8 (12) por tallo. Pálea con la porción central a las aristas bidentada, glabra; porciones laterales por lo general pilosas en toda su superficie o en la base.
   2. Plantas perennes. Lígula un anillo de pelos cortos, casi imperceptible. Raquis y segunda gluma con pelos de base papilar. Anteras anaranjadas. .... var. *rothrockii*
   2. Plantas anuales. Lígula un anillo de pelos cortos y largos, conspicuo. Raquis escabroso, segunda gluma sin pubescencia. Anteras amarillo-rojizas..... ..... var. *barbata*

Bouteloua barbata Lagasca var. *barbata* TIPO: MEXICO. *Actinochloa barbata* (Lag.) Roemer & Schultes, *Syst. Veg.* 2:420. 1817. *Eutriana barbata* (Lag.) Kunth, *Rev. Gram.* 1:96. 1829.

Chondrosium polystachyum Bentham, *Bot. Voy. Sulph.* 56. 1844. TIPO: MEXICO. Baja California Sur: Bahia Magdalena, *Barclay* (FRAGMENTO HOLOTIPO: US; Isotipo: BM).

Planta anual, de ciclo corto, de tamaño y aspecto variable, según hábitat y grado de desarrollo. Tallos de 5 a 30 (-50) cm de longitud, separados y decumbentes o amacollados y erguidos en vegetación densa, nunca desarrollan estolones, entrenudos sólidos. Hojas persistentes, caulinares y basales, de textura suave. Vaina con márgen membranoso-hialino de 1 a 5 cm de longitud. Lígula en forma de anillo de pelos cortos y largos, hialinos, de 0.6 a 1 mm de longitud. Láminas foliares planas, rectas de 0.5 a 9 cm de longitud, de 1 a 3 mm de ancho; haz escabroso con pubescencia de base papilar a los lados de la nervadura principal, a veces en las nervaduras laterales; envés escabroso, a veces con pelos hirsutos de base papilar; ápice de la lámina acuminado. Inflorescencia en forma de espigas unilaterales purpúreas, corto pediceladas, curveadas (navajitas) de 1 a 2.5 cm de longitud, 1.5 a 5 mm de ancho; raquis plano, escabroso, (2-) 7 (-11) espigas por tallo. Espiguillas 20 a 30 (-45) en cada espiga. Glumas desiguales ovado-lanceoladas, quilladas, emarginadas irregularmente, prolongándose en un mucrón corto; primera gluma de 0.7 a 1.5 mm de longitud, de color verde pálido a hialino; segunda gluma de 1.5 a 2.5 mm de longitud, glabra, púrpura marginada. Lema de 1.7 a 4 mm de longitud, con base y márgenes pilosos, hialinos, con tres aristas escabrosas, con 2 dientes centrales y 2 laterales, de color verde pálido. Pálea de 1.5 a 4 mm de longitud, color verde pálido, con 2 aristas escabrosas, dos dientes centrales y dos laterales pilosos, tipo auriculas. Flor rudimentaria de 1.5 a 4 mm de longitud, incluyendo las aristas, con 3 aristas purpúreas, escabrosas, divergentes, de 0.8 a 4 mm de longitud, y 3 lóbulos de 0.5 a 1 mm de longitud, color verde claro con los márgenes púrpura, que parten de un estípite corto, de 0.7 a 1 mm de longitud, con un anillo piloso. Anteras amarillo rojizo (Figura 5).

Se encontraron ejemplares de pequeña estatura (10 cm o menos), frágiles y de raíces muy delicadas, débilmente adheridos al suelo, localizados principalmente en áreas de disturbio como orilla de caminos, carreteras, y en zonas agrícolas pobres. Existen ejemplares de esta variedad que son más vigorosos y estan más fuertemente unidos al substrato, de tallo mayor a 30 cm, decumbentes pero más amacollados, con hojas más largas, con 7 a 11 espigas hasta de 2.5 cm de longitud y 5 mm de ancho, conteniendo hasta 45 espiguillas por espiga. Se llega a confundir a primera vista con la forma típica de la variedad *rothrockii*, excepto que la variedad *rothrockii* tiene pubescencia de base papilar en el raquis de la segunda gluma, la lígula es casi imperceptible, y se le localiza principalmente en laderas con suelos menos arenosos y gravosos.

Habitat: Orilla de caminos, bordos, arroyos; áreas con disturbio de suelos arenosos, gravosos y arcillosos (zonas de pastoreo, áreas de cultivo); matorrales desértico micrófilo, espinoso, subespinoso, y sarco-crasicaule; pie de monte de suelos gravosos, arenosos y dunas arenosas. Altitud de 15 a 2550 msnm, predominando entre los 1800 a 2000 msnm.

Distribución: Aguascalientes, Baja California Norte y Sur, Coahuila, Colima, Chihuahua, Durango, Guanajuato, Guerrero, Hidalgo, Jalisco, México, Nuevo León, Puebla, Querétaro, San Luis Potosí, Sinaloa, Sonora, y Zacatecas.

Ejemplares revisados. Aguascalientes: *M. de la Cerda 3225, 3273, 3807, 3829, 4168, 4203* (HUAA); *M. Siqueiros 2478* (HUAA); *Plan Lerma 1117* (HUAA); *J.R. Reeder & C.G. Reeder 1325* (MEXU). Baja California Norte: *Moran 7563* (ENCB); *Cowan 902* (IEB). Baja California Sur: .*Gould 12131* (IBUG); *Villarreal 4195* (IBUG); *Vargas, Ruiz, Méndez, y Días 46* (ENCB); *Wiggins & Gillespie 4160* (MEXU); *D.M. Porter 68, 101, 388* (MEXU); *Ferris 4060J* (MEXU); *Agúndez 5* (MEXU); *Alexander 1* (MEXU); *Kellogg 1943, 2233* (MEXU); *Evenberg, T. Raus, & C. Schiers 2932* (MEXU); *C. Díaz L. 4102* (MEXU); *D.B. Wiggins 18015* (MEXU); *J.R. Reeder & C.G. Reeder 6742* (MEXU); *I.L. Wiggins 14624, 14382, 15004, 15721, 15025, 17584* (MEXU); *W. López-Formant C308* (MEXU); *E. Palmer 126* (MEXU); *L.M. Villarreal 3259, 4195* (UAG). Coahuila: *Carranza 997* (IBUG); *L.M. Villarreal 7848* (IBUG); *Rodríguez s/n* (IEB,SLPM); *E. Palmer 400, 514* (MEXU); *Medellin-Leal 981* (MEXU); *I.M. Johnston 8216* (MEXU); *C.G. Pringle 11216* (MEXU). Colima: *C.R. Orcutt 5461* (MEXU). Chihuahua: *Y. Herrera y M. Siqueiros 1347* (CIIDIR-HUAA); *Melgoza 349* (IBUG); *LeSauer 059, 065* (MEXU); *C.G. Pringle 490* (MEXU); *T.R. Soderstrom 859* (MEXU); *R. Molinar 19* (MEXU); *Melgoza 349* (UAG). Durango: *S. González y S. Acevedo 2508* (CIIDIR,IEB, HUAA); *Y. Herrera 319* (CIIDIR); *Y. Herrera y M. Siqueiros 1350* (CIIDIR-HUAA); *M. Mendoza y R. Santiago s.n.* (IEB, SLPM); *Martínez Marín s.n.* (IEB); *J.R. Reeder & C.G. Reeder 1664* (MEXU); *J. Valdéz, R. Grether, y H. Quero 24* (MEXU); *F. Chiang, T. Wendt, & M.C. Johnston 8291* (MEXU); *T.R. Soderstrom 818* (MEXU); *H.S. Gentry 8577, 8610* (MEXU); *E. Palmer 714* (MEXU); *C. Díaz L. 7447, 7480* (UAG); *R. Ruíz de Esparza 18791* (UAG); *G. Aguirre L. 19614* (UAG). Guanajuato: *J.R. Reeder & C.G. Reeder 2242, 2278* (MEXU). Guerrero: *G.H. Hinton 6439* (ENCB). Hidalgo: *Hernández 6677* (ENCB,MEXU); *J.R. Reeder, C.G. Reeder, & L.N. Goodding 1621* (ENCB,MEXU); *I. Díaz, V.J. Vilchis, y A. Díaz 350* (MEXU). Jalisco: *Cobian 146* (IBUG); *R. Guzmán 6064* (IBUG); *Santana Michel y Benz 5406* (IBUG). México:

J.L. Magaña 224 (ENCB,MEXU). Nuevo León: *J. Villareal 7248* (ANSM). Puebla: *F. Chiang et al. F-2095* (MEXU); *A.S. Hitchcock 6077* (US). Querétaro: *S. Zamudio 3335, 3446* (IEB). San Luis Potosí: *J. Almanza 005* (IEB); *Bravo 020, 056* (IBUG); *Banda s/n* (SLPM); *J.R. Ballin 821* (SLPM); *H. Bravo 020* (MEXU); *A. Gómez Lorence 119, 677* (ENCB,SLPM); *J.I. Mendoza 4* (SLPM); *M. Siqueiros 2441* (CIIDIR,HUAA); *E.R. Sohns 1080, 1241, 1252* (MEXU); *J. Rzedowski 3295, 3665, 4572, 5314, 6526, 6601* (SLPM); *F. Takaki s.n. 1225, 1239, 1269, 1879* (SLPM); *F. Takaki 10999* (MEXU); *J.L. Jiménez s/n* (SLPM); *F. Miranda 8918* (MEXU); *C.D. Orcutt 5437* (MEXU); *Schaffner 1020* (MEXU). Sinaloa: *F.W. Gould 12116* (ANSM). Sonora: *Y. Herrera y M. Siqueiros 1322, 1326, 1328, 1330, 1332* (CIIDIR-HUAA); *Anderson 12547* (IBUG); *R. Guzmán 717* (IBUG); *J.R. Reeder & R.S. Felger 8086* (MEXU); *R.S. Felger 85-949* (IEB); *R.S. Felger 14971* (IEB,ENCB,MEXU); *R.S. Felger 86379* (MEXU); *M. Equihua s.n.* (MEXU); *H.S. Gentry 11339* (MEXU); *E. Ezcurra s.n.* (MEXU); *W.R. Anderson, M.W. Chase, & D.C. Wight 12547* (IEB,MEXU); *F.W. Pennell s.n.* (MEXU); *J. Vera S. 1848, 2003, 2007* (MEXU). Zacatecas: *J. Balleza 1640, 1721, 1838* (MEXU); *A.S. Gentry & D. Engard 23599* (MEXU); *H. Hidrogo s.n.* (SLPM).

Bouteloua barbata Lag. var. *rothrockii* (Vasey) Gould, Ann. Missouri Bot. Gard. 66:403. 1979. BASIONYM: *Bouteloua rothrockii* Vasey, Contr. U.S. Natl. Herb. 1:268. 1893. TIPO: U.S.A. Arizona: Yavapai Co., *Rothrock 347* (HOLOTIPO: US; Isotipo: GH).

Planta perenne, con ciclo de vida corto. Raíces fibrosas delgadas. Tallos de 25 a 45 (-75) cm de alto, erectos, formando macollos pequeños, a veces geniculados en la base, no desarrolla claramente estolones, de color verde, entrenudos sólidos, tallos ramificandose apartir del primer al tercer nudo. Hojas persistentes de color verde, caulinares principalmente, las basales de textura suave. Vaina con márgen auricular, glabra, de 2 a 8 cm de longitud. Lígula de 0.5 mm de longitud, casi imperceptible, en forma de un anillo de pelos hialinos cortos. Láminas foliares planas a involutas, rectas, de (2-) 3 a 5 (-8) cm de longitud, de 1 a 3 (-4) mm de ancho, haz y envés escabroso, haz con pubescencia esparcida de base papilar, flexibles, ápice de la lámina acuminado. Inflorescencia con (3-) 4 a 8 (-12) espigas por tallo, color purpúreo claro, cortamente pediceladas no ramificadas, curveadas (navajitas), de 1 a 2 (-3) cm de longitud, de 2 a 5 mm de ancho, raquis plano, pubescente con pelos de base papilar (a veces muy prominente). Espiguillas 35 a 40 (-55) por espiga. Glumas desiguales ovado-lanceoladas, quilladas; primera gluma hialina, más corta que la segunda, de 1.0 a 1.5 mm de longitud, con un mucrón corto; segunda gluma del doble que la primera, de 2.5 a 3.0 mm de longitud, purpúrea, prolongandose en un mucrón corto, pubescente principalmente en la quilla, los pelos largos, hialinos, de base papilar a veces muy prominente. Lema triaristada, de 3 a 5 mm de longitud incluyendo las aristas, verde pálido, pilosa hasta la parte media, aristas escabrosas, de color púrpura, lema con 4 dientes dos centrales y dos laterales. Pálea de 3 a 5 mm de longitud, verde pálido, biaristada, aristas escabrosas, púrpuras, con la porción central bidentada, glabra; las porciones laterales pubescentes en la base. Flor rudimentaria de 3 a 5 mm de longitud, incluyendo las aristas, estípite corto, de 1.0 a 1.5 mm de longitud, con un anillo piloso, del cual parten dos lóbulos, color verde pálido, de 1 mm de longitud entre 3 aristas escabrosas, purpúreas, divergentes, de 2.0 a 3.5 mm de longitud. Anteras anaranjadas (Figura 6).

Plantas perennes que forman un macollo recto, que puede llegar a confundirse con la var. *barbata* (ver comentarios en var. *barbata*). Su característica distintintiva morfológica son los pelos de base papilar distribuidos en el raquis y segunda gluma, y su lígula casi imperceptible menor de 0.5 mm de longitud.

Se encontraron ejemplares que desarrollan estolones falsos ya que en los nudos geniculados que están en contacto directo con el suelo emiten raices delicadas, pudiendo confundirse con la var. *sonorae*; de la cual se puede diferenciar en la talla (plantas cortas de 12 a 16 [-20] cm de longitud), en el número de espigas (2 a 4) y de espiguillas (25 a 30), el raquis y la segunda gluma son glabras, y la lígula es conspicua de 1 a 2 mm de longitud.

Habitat: Suelos gravosos y arenosos de playas y costas, selva bajas caducifolia y desierto con densos arbustos espinosos. Solo en altitudes de 10 a 400 msnm.

Distribución: Sinaloa y Sonora. Reportada también para Baja California Sur, Chihuahua, Coahuila, y Durango; sin haberse encontrado ejemplares de esas localidades, o posiblemente se trate de ejemplares mal determinados.

Ejemplares revisados. Sinaloa: *Y. Herrera y M. Siqueiros 1313, 1316* (CIIDIR-HUAA); *R. McVaugh 1439* (IEB); *H.H. LeRoy 8772* (ENCB); *D. Jackson 124* (ENCB); *H.S. Gentry 14338* (MEXU); *F.W. Gould 12112* (US). Sonora: *W.R. Anderson 12547* (MEXU); *A.S. Hitchcock 3583* (US); *F.W. Pennell 29245* (US); *I.L. Wiggins 7167* (US); *H.S. Gentry 11339* (US); *F.W. Gould 12081, 12083* (US).

Bouteloua barbata Lag. var. *sonorae* (Griffiths) Gould. BASIONYM: *Bouteloua sonorae* Griffiths, Contr. U.S. Natl. Herb. 14:389. 1912. TIPO: MEXICO. Sonora: Rio Yaqui, *Palmer 1869* (HOLOTIPO: US).

Planta perenne, poco común. Tallos de 12 a 16 (-20) cm de longitud, erectos a geniculados desde una base dura y nudosa, delgados, resistentes; desarrollando estolones claramente hasta de 50 cm de longitud. Raices en los entrenudos del estolón, fibrosas, abundantes y muy delicadas. Hojas basales principalmente y caulinares. Vainas cortas de 1.0 a 1.5 cm de longitud, márgenes tipo auricular, parte dorsal con pubescencia de base papilar. Lígula en forma de un anillo de pelos hialinos de 1 a 2 mm de longitud. Láminas foliares de 0.5 a 4 cm de longitud, de 1 a 3 mm de ancho, planas, ápice acuminado, haz, envés y márgenes pilosos con pubescencia hialina de base papilar. Inflorescencias con espigas purpúreas, cortamente pediceladas, no ramificadas, curveadas (navajitas), de 1 a 2 cm de longitud, de 2 a 3 mm de ancho, raquis plano, glabro, n´Umero de espigas por tallo 2 a 4, por lo general 4. Espiguillas 25 a 30 por espiga. Glumas desiguales, glabras, ovado-lanceoladas; primera hialina de 1.0 a 1.5 mm de longitud, con un mucrón corto; segunda púrpura con márgenes hialinos de 2.0 a 2.5 mm de longitud. Lema de 3.0 a 3.2 mm de longitud, pilosa en la base, triaristada, de color verde claro a casi hialina, con 4 dientes, 2 centrales y 2 laterales a manera de aurículas, aristas escabrosas, verde claro. Pálea de 3 mm de longitud, hialina a verde claro, glabra generalmente, biaristada, aristas escabrosas, de color verde claro, porción central a las aristas entera, glabra; porciones laterales glabras. Flor rudimentaria de 3 mm de longitud incluyendo las aristas, con 3 aristas escabrosas y 3 lóbulos púrpura, estípite corto de 1 mm longitud con un anillo piloso. Anteras anaranjadas (Figura 7).

Planta poco común, no se encontraron ejemplares herborizados ya que los denominados con esta variedad en los herbarios consultados, resultaron estar mal determinados. La característica distintiva de esta variedad es la formación de estolones.

Habitat: Suelos arenosos de los alrededores de selva baja caducifolia, zonas costeras abiertas. Altitud 130 msnm.

Distribución reportada: Colima, Sinaloa, y Sonora; encontrada en este estudio solo Sinaloa.

Ejemplares revisados: Sinaloa: *Y. Herrera y M. Siqueiros 1309* (CIIDIR-HUAA).

AGRADECIMIENTOS

Este estudio fué realizado con el apoyo económico parcial de: Instituto Politécnico Nacional, COFAA-IPN, CONACyT 3098-N y CONABIO B061. Damos las gracias al personal de los Herbarios consultados por el material prestado y las facilidades para trabajar en su recinto; así también agradecemos a las M. en C. Margarita de la Cerda y María Elena Siqueiros por sus correcciones y sugerencias a una primera versión de este manuscrito.

LITERATURA CITADA

Beetle, A.A., F.E. Manrique, L.V. Jaramillo, S.P. Guerrero, S.A. Miranda, T.I. Nuñez, & H.A. Chimal. 1987. Las Gramíneas de México. SARH-COTECOCA Vol. II. México, D.F., México. 344 pp.

Berlyn, G.P. & J.P. Miksche. 1976. *Botanical Microtechnique and Cytochemistry*. Iowa State University Press, Ames, Iowa. 326 pp.

Ellis, R.P. 1976. A procedure for standardizing comparative leaf anatomy in the Poaceae. I. The leaf-blade is viewed in transverse section. Bothalia 12:65-109.

Ellis, R.P. 1979. A procedure for standardizing comparative leaf anatomy in the Poaceae. II. The epidermis as seen in surface view. Bothalia 12:641-671.

Gould, F.W. 1979. The genus *Bouteloua* (Poaceae). Ann. Missouri Bot. Gard. 66(3):348-416.

Griffiths, D. 1912. The Grama Grasses: *Bouteloua* and Related Genera. Contr. U.S. Natl. Herb. 14:343-428.

Hitchcock, A.S. 1913. Mexican Grasses in the U.S. National Herbarium. Contr. U.S. Natl. Herb. 17:181-389.

Hitchcock, A.S. 1935. *Manual of the Grasses of the United States*. United States Department of Agriculture. Miscellaneous Publication 200. 1040 pp.

Lott, A. & F. Chiang. 1990. Manual de Herbario, Consejo nacional de la Flora de México. 1a. Edición. México, D.F., México.

Reeder, J.R & C.G. Reeder. 1980. Systematics of *Bouteloua breviseta* and *Bouteloua bromosa*. Syst. Bot. 5(3):312-321.

Phytologia (February 1996) 80(2):92-94.

A NEW SPECIES OF *PSACALIUM* (ASTERACEAE, SENECIONEAE) FROM OAXACA, MEXICO

B.L. Turner

Department of Botany, University of Texas, Austin, Texas 78713 U.S.A.

ABSTRACT

A new species, ***Psacalium hintoniorum*** B.L. Turner, is described from Oaxaca, México. It is closely related to *P. beamanii* H. Rob. of eastern Oaxaca, but amply distinct in habit, leaf shape, and by characters of the capitulescence.

KEY WORDS: Asteraceae, *Psacalium*, México, systematics

Routine identification of Oaxacan plants has revealed the following novelty.

PSACALIUM HINTONIORUM B.L. Turner, *spec. nov.* Figure 1. TYPE: MEXICO. Oaxaca: Miahuatlán, Neverias, "llano in pine forest", 2650 m, 6 Jan 1996, *Hinton et al. 26557* (HOLOTYPE: TEX!).

Simile *P. beamanii* H. Rob. sed plantae majores sunt, habentes folia cum marginibus lobatis (vice integerarum) et capitula in cymis potius elongatis apertisque disposita.

Perennial loosely tomentose or lanate herbs 30-40 cm high, arising from fascicled fusiform roots. Leaves mostly basal, 20-35 cm long, 6-8 cm wide; petioles 8-10 cm long; blades ovate to elliptic in outline, pinnately veined, bicolored, the lower surfaces densely tomentose, the margins irregularly 5-8 lobed along each side. Heads 3-12, borne on nearly naked tomentose scapes ca. 35 cm high, the lower portion of scapes with 1 or 2 much reduced petiolate leaves. Involucres 7-10 mm high, loosely tomentose, but with age glabrescent. Receptacle alveolate, epaleate. Involucral bracts ca. 11, separate, linear-lanceolate, rather indurate below. Florets 30-50 per head (est.), perfect, fertile. Corollas pink to pale lavender, glabrous; tube ca. 1.5 mm long; limb ca. 3 mm long, the lobes 5, linear lanceolate, separate to the base or nearly so. Anthers ca. 2 mm long, purple, obtuse or rounded below, the apices broadly lanceolate, ca. 0.5 mm long. Style with a broad basal node, the shaft abruptly

Figure 1. *Psacalium hintoniorum*, from holotype.

constricted; branches ca. 1.2 mm long, papillose-pubescent or scurfy beneath, the apices broadly obtuse. Achenes (immature) ca. 4 mm long, 6-8 ribbed, glabrous; pappus a crown of 10-15 fragile readily deciduous bristles ca. 1/2 as long as the corolla tube.

Psacalium hintoniorum is obviously very closely related to *P. beamanii*, the latter occurring in the more eastern sierras of Oaxaca (ca. Llano de las Flores, 20 km E of Ixtlán). Both species possess similar habits, pink or purplish flowers, achenes with fragile abbreviated pappus bristles, etc. *Psacalium hintoniorum*, however, is a more robust plant with larger, loosely lanulose pubescence, the leaves having markedly lobate margins (vs. entire) and the heads on much longer, less congested, scapes.

As correctly noted by Robinson in his description of *Psacalium beamanii*, the taxa compared here "are not very typical of the genus *Psacalium*. . . . [as] the reddish flowers differ from the white-flowered condition found in all other species." Additionally, their very short fragile pappus bristles set the two species apart from most other members of the genus.

I take pleasure in naming this distinctive taxon for the G.B. Hinton family, well aware that there already exists a *Psacalium hintonii*. The Hinton family, however, now with four generations involved in the collection of plants from remote regions of México, is fully deserving of this honor having put life and limb on the line many times in their exploration of this or that isolated mountain range (*cf.* Turner 1993, 1995).

ACKNOWLEDGMENTS

I am grateful to Gayle Turner for the Latin diagnosis, and to her and Justin Williams for reviewing the manuscript. Maria Thompson provided the illustration.

LITERATURE CITED

Turner, B.L. 1993. Jaime Hinton: letter from a rabid plant collector in México. Phytologia 75:432-451.

Turner, B.L. 1995. A new species of *Lupinus* (Fabaceae) from Oaxaca, México: a shrub or tree mostly three to eight meters high. Phytologia 79:102-107.

Phytologia (February 1996) 80(2):95-99.

TWO NEW SPECIES OF *SENECIO* (ASTERACEAE) FROM MEXICO

B.L. Turner

Department of Botany, University of Texas, Austin, Texas 78713 U.S.A.

ABSTRACT

Two new species of *Senecio* are described from México: ***S. ritovegana*** B.L. Turner, from Sinaloa and western Chihuahua (related to *S. parryi* A. Gray); and ***S. sandersii*** B.L. Turner, from Sonora and western Chihuahua (related to *S. lemmonii* A. Gray).

KEY WORDS: Asteraceae, Senecioneae, *Senecio*, México, systematics

Routine identification of species in connection with a treatment of the tribe Senecioneae for México has occasioned the following novelties.

SENECIO RITOVEGANA B.L. Turner, *spec. nov.* Figure 1. TYPE: MEXICO. Sinaloa: Mpio. Badiraguato, 15 km N of Surutato on the road to Sta. Rita, pine-oak forests, 2000-2200 m, 9 Dec 1987, *Rito Vega 2550* (with F. Hernández & A. Hernández) (HOLOTYPE: TEX!)

Similis *S. parryi* A. Gray sed caulibus foliisque sparsim aut moderate glandulosis-pubescentibus (vice folii dense pilosi-viscidi), indumento plerumque 2.5 mm alto (vice 0.8-1.5 mm longi), involucris moderate capitatus-glandulosis (vice dense villosi), bracteis exterioribus interioribus 1/2 plo longioribus aut minus (vice 1/2 plo longiorum aut magis).

Erect annual herbs 30-80 cm high. Stems moderately to densely glandular-pubescent. Leaves clasping, linear-lanceolate to oblanceolate, gradually to somewhat abruptly reduced upwards. Midstem leaves 7-14 cm long, 1.0-2.5 cm wide, sparsely to densely glandular-pubescent, irregularly serrate. Heads 5-20, arranged in rather flat-topped or rounded, very open, terminal cymes, the ultimate peduncles glandular-pubescent, mostly 2-4 cm long. Involucres broadly campanulate, ca. 1 cm high, 1.5 cm wide (pressed); principal bracts linear-lanceolate, tufted apically, glandular-pubescent with mostly short stipitate-glandular hairs 0.2 mm long or less. Outer bracts (the calyculus) of 10 or more spreading bracts 3-5 mm long. Ray florets ca. 13, the ligules yellow, 6-10 mm long, ca. 1 mm wide. Disk florets numerous (100+),

the corollas yellow, ca. 8 mm long, the limb ca. 4 mm long, glabrous; lobes 5, the outer surfaces smooth or nearly so. Achenes cylindric, ca. 3 mm long, densely short-strigose throughout, the pappus of numerous readily deciduous, slender bristles 7-10 mm long.

ADDITIONAL SPECIMEN EXAMINED: MEXICO. Chihuahua: La Reforma (Rancho Quemado), 108° 55′ W × 28° 05′ 30″ N, 1800 m, 7-9 Nov 1986, *Howell et al. 724* (TEX).

When first received, this plant was tentatively identified as *Senecio parryi*. The latter is typified by material collected in Coahuila, México, just across the Río Grande from the Big Bend Region of trans-Pecos Texas. In my opinion, *S. parryi* is largely confined to the Chihuahuan Desert habitats of northern Coahuila and closely adjacent Chihuahua, although the name has been applied to plants from the Sonoran Desert regions which I have described here as *S. ritovegana*. These two taxa differ by a number of features, as noted in my diagnosis, and are not likely to be confused either among themselves or with yet other species.

It is a pleasure to name this species for Sr. Rito Vega, botanist working out of the Univ. of Sinaloa, Culiacán, Sinaloa, an exceptionally skilled field collector.

SENECIO SANDERSII B.L. Turner, *spec. nov.* Figure 2. TYPE: MEXICO. Sonora: Mpio. Alamos, NE slope of Sierra de Alamos, Cañon de Huerta, on Chalaton Trail from Alamos (108° 59′ W × 26° 59′ N), ca. 1000 m, 16 Oct 1992, *A.C. Sanders 13075* (HOLOTYPE: TEX).

Similis *S. lemmonii* A Gray sed differt caulibus plerumque simplicibus et non ramosis, indumento glanduloso en caulibus capitulisque, involucris parvioribus (7-8 mm altis vice 8-10 mm altis) et bracteis singulia involucrorum caespitosis.

Perennial simple-stemmed herbs to 1 m high. Midstems green, moderately glandular-pubescent to nearly glabrous, the vestiture ca. 0.15 mm high. Leaves numerous and gradually reduced upward. Midstem leaves sessile, clasping, mostly linear-lanceolate, 8-10 cm long, 0.5-1.5 cm wide, sparsely glandular-pubescent to nearly glabrous, the margins irregularly dentate, the apices acute. Heads 5-9, arranged terminal in stiffly erect flat-topped cymes, the ultimate peduncles mostly 1-2 cm long, glandular-pubescent to nearly glabrous. Involucres campanulate, 7-8 mm high, ca. 6 mm wide (pressed); bracts 13-21, linear-lanceolate, sparsely glandular-pubescent to glabrate, the apices lanceolate to apiculate, tufted, reddish or not; calyculus of 5-8 linear-lanceolate, appressed bracts 2-3 mm long. Ray florets 6-8, the ligules yellow, 6-8 mm long, ca. 1.5 mm wide; disk florets 20-40, glabrous, the corollas 5-lobed, yellow, sparsely warty on the exterior, if at all. Achenes (immature), densely short-pubescent throughout; pappus of numerous white, readily detached slender bristles 5-6 mm long.

ADDITIONAL COLLECTION EXAMINED: MEXICO. Chihuahua: Nabogame (108° 59′ W × 28° 30′ N), 1800 m, 20 Sep 1987, *J.E. Leferriere 1195* (TEX).

Figure 1. *Senecio ritovegana* from holotype.

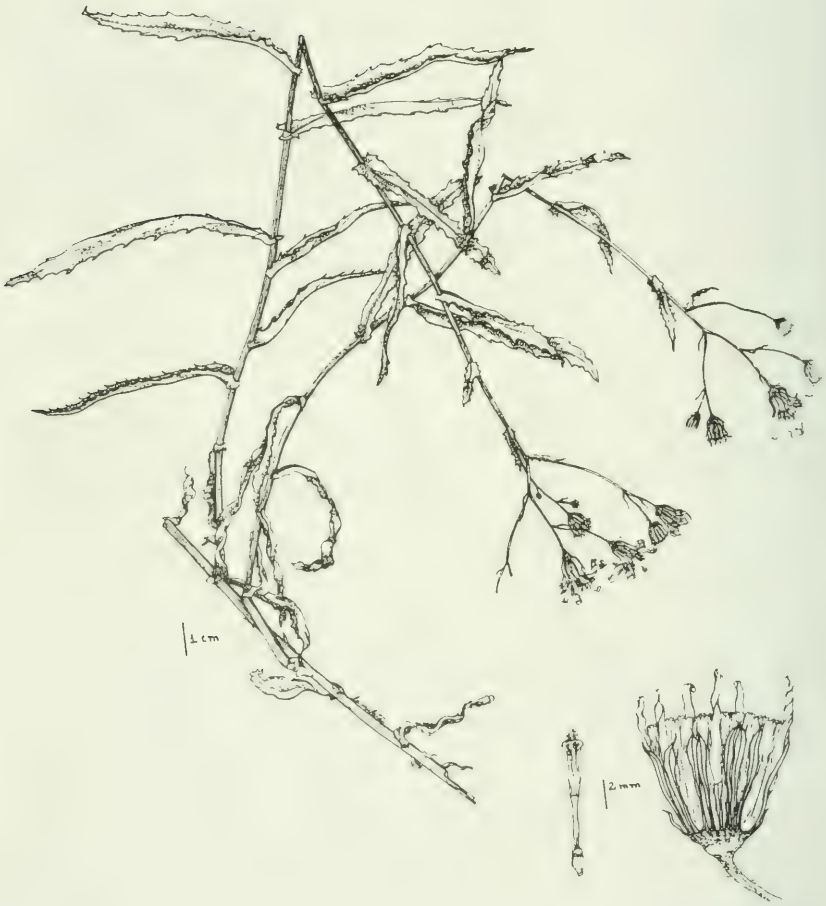


Figure 2. *Senecio sandersii* from holotype.

Senecio sandersii is superficially similar to *S. lemmonii* A. Gray, the latter occurring primarily in upper Baja California del Norte, Sonora, and closely adjacent California and Arizona (whence the type). It differs from *S. lemmonii* in having simple, mostly unbranched stems, glandular vestiture on both stems and involucre, smaller heads (involucres 7-8 mm high vs. 8-10 mm high), and tufted involucral bracts.

The collection from Chihuahua, cited above, was originally identified as *Senecio lemmonii*. It differs from type material in having nearly glabrous stems and leaves, the latter having pronounced basal auricles, otherwise the two accessions are very similar.

It is a pleasure to name this taxon for its principal collector, A.C. Sanders, well known collector in the Río Mayo Region of northwestern México, working out of the University of California, Riverside.

ACKNOWLEDGMENTS

Gayle Turner provided the Latin diagnoses, and she and Justin Williams reviewed the manuscript.

Phytologia (February 1996) 80(2):100-103.

TWO NEW CLIFF-DWELLING SPECIES OF *PINAROPAPPUS* (ASTERACEAE, LACTUCEAE) FROM COAHUILA, MEXICO

B.L. Turner

Department of Botany, University of Texas, Austin, Texas 78713 U.S.A.

ABSTRACT

Two new species of *Pinaropappus* are described, ***P. mojadanus*** B.L. Turner from Sierra Mojada, Coahuila; and ***P. powellii*** B.L. Turner from Sierra de la Encantada, Coahuila. Both are cliff-dwelling species and relate to *P. parvus*. A key and a map showing the distribution of the five known cliff-dwellers in the genus *Pinaropappus* are provided.

KEY WORDS: Asteraceae, Lactuceae, *Pinaropappus*, México, systematics

Preparation of a treatment of *Pinaropappus* for México has occasioned the present paper.

PINAROPAPPUS MOJADANUS B.L. Turner, *spec. nov.* Figure 1. TYPE: MEXICO. Coahuila: Sierra Mojada, S of La Esmeralda, Cañon de Calabazas (27° 16′ N × 103° 40′ 30″ W), 1550-1700 m, 6 May 1973, *M.C. Johnston, et al. 10886A* (HOLOTYPE: TEX!).

Similis *P. parvo* S.F. Blake sed foliis plerumque oblanceolatis aut spathulatis (vice plerumque lineatorum - lanceolatorum), apicibus obtusis aut rotundatis (vice acutatorum), et ligulis corollarum penitus 5-lobatis ad apicem, 1.0-1.5 mm longis (vice ca. 0.5 mm longis).

Perennial herbs 2-6 cm high, arising from a branched woody root system. Leaves thin, glabrous, persistent as a basal rosette; petioles mostly 3-8 mm long; blades 1-3 cm long, oblanceolate to spathulate, grading into the petioles, the margins somewhat papillose, the apices obtuse to rounded. Heads 1 or 2 per scape, well developed scapes bearing 2-3 reduced stem leaves. Involucres subconical, 4-5 mm high, 2-3 mm wide (pressed); bracts 3-4 seriate, scarcely gradate, glabrous, mostly green with pink maculations toward the apices. Florets all ligulate, 10-20 per head; corollas white, the ligules pinkish beneath; ligules 3-4 mm long, the apices with 5 teeth 1.0-1.5 mm long;

tubes ca. 3 mm long. Achenes (immature) ca. 3.5 mm long; pappus of 40-50 tawny bristles somewhat longer than the corolla tubes.

ADDITIONAL SPECIMEN EXAMINED: MEXICO. Coahuila: Sierra Mojada, just S of Esmeralda, above the Soc. Cooperativa Minera, 1600-2463 m, 1 Sep 1972, *M.C. Johnston, et al. 9069* (LL).

According to label data the species occurs on steep or "very steep limestone slopes and canyons." It is known only from the Sierra Mojada, hence the name.

Pinaropappus mojadanus superficially resembles *P. parvus* and was identified as such by Jackie Poole (annotation label, 1982). Both possess similar growth habits and involucres, but *P. mojadanus* has oblanceolate to spathulate leaves, with obtuse or rounded apices (vs. linear-lanceolate and narrowly acute). Additionally, *P. mojadanus* has pink-maculate involucral bracts and deeply lobed ligules (vs. non-maculate and shallowly lobed ligules).

PINAROPAPPUS POWELLII B.L. Turner, *spec. nov.* TYPE: MEXICO. Coahuila: Sierra de la Encantada, ca. 92.5 mi NW of Muzquiz, ca. 10 mi WNW of Rancho La Peña, limestone bluffs in large dead-end canyon (Boquilla Canyon), 22 May 1968, *A.M. Powell 1593* (HOLOTYPE: TEX!).

Similis *P. parvo* S.F. Blake sed major, foliis multo longioribus, radicibus maximis, capitulisque majoribus et fulvis, cum bracteis note multiserratis et acutatissimis.

Perennial scapose herbs 10-20 cm high, arising from a massive woody root system. Leaves thin, glabrous, persistent as a basal rosette; petioles mostly 1-2(-3) cm long, grading into the blades; blades linear-lanceolate, 3-7 cm long, the apices acute. Scapes 10-20 cm high, glabrous, bearing 1 or 2 bracts at or near the middle, and an additional 1 or 2 near the apex. Involucres campanulate to hemispheric, 12-14 mm high, 15-20 mm wide (pressed); bracts 6-8 seriate, markedly gradate-imbricate, glabrous, mostly ovate with acuminate apices, tawny with a purplish lunate marking below. Florets all ligulate, ca. 50 per head (estimated); corollas white, the ligules 6-8 mm long, the apices with 5 minute teeth; tubes ca. 3 mm long. Achenes (immature) glabrous, ca. 3 mm long; pappus of ca. 40 persistent tawny bristles somewhat longer than the corolla tubes. Chromosome number, $2n = 18$.

This taxon is remarkably distinct, especially in its involucral characters, as noted in the description. It is named for its primary collector, A.M. Powell, Prof. of Biology, Sul Ross State University, Alpine, Texas, well known for his systematic research on the mostly cliff-dwelling genus *Perityle* (Powell 1969, 1973). No doubt he was looking for members of the latter genus when he collected the present novelty.

The first cliff-dwelling species of *Pinaropappus* was described by S.F. Blake in 1924 from collections made in southernmost Eddy County, New Mexico. It was subsequently collected in western trans-Pecos, Texas. Turner (1992) described two additional cliff-dwelling Mexican species, *P. pattersonii* B.L. Turner from Nuevo

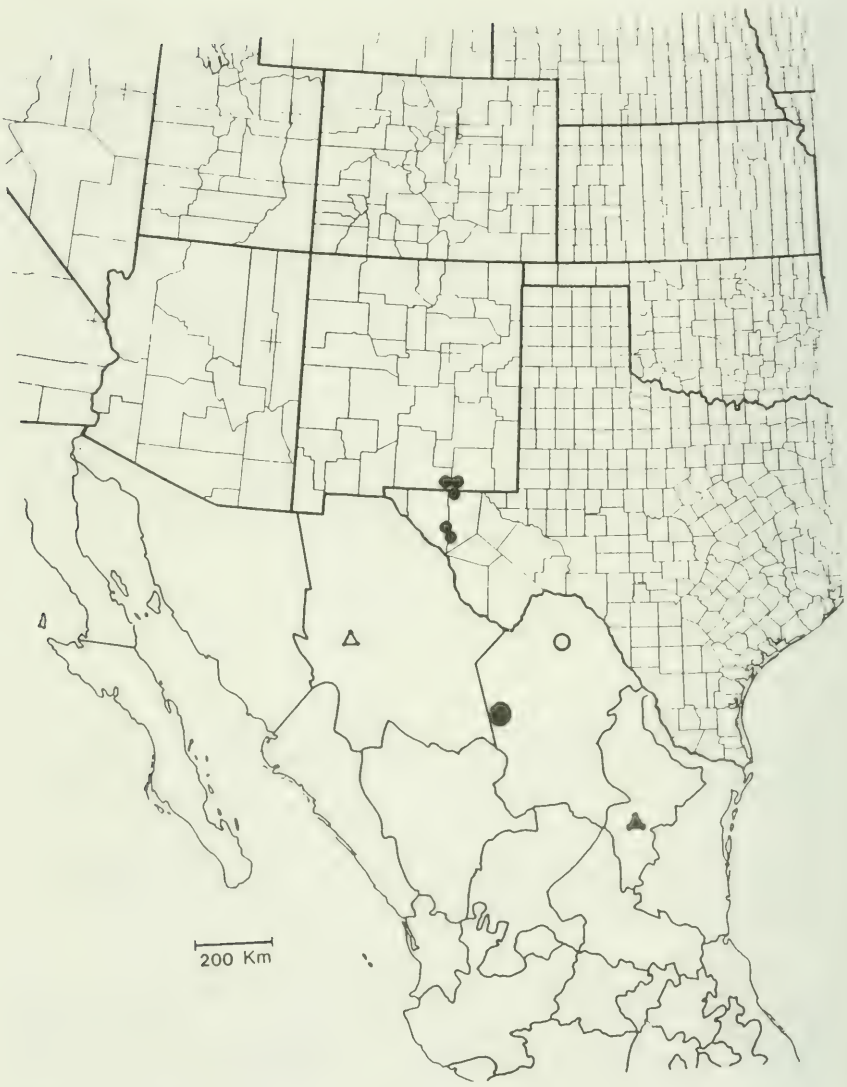


Figure 1. Map showing distribution of the five cliff-dwelling species of *Pinaropappus*: *P. mojadanus* (large closed circle); *P. parvus* (small closed circle); *P. pattersonii* (closed triangle); *P. pooleanus* (open triangle); *P. powellii* (open circle).

León, and *P. pooleanus* B.L. Turner from Chihuahua. Description of the present two Coahuilan taxa bring to five the number of cliff-dwelling species recognized. A key to these follows.

KEY TO CLIFF-DWELLING SPECIES OF *PINAROPAPPUS*

1. Plants producing well-defined aerial stolons; Nuevo León..... *P. pattersonii*
1. Stems not producing aerial stolons; New Mexico, Texas, Chihuahua, Coahuila..(2)
   2. Involucral bracts arranged in 6-8 evenly graduate series, tawny throughout with sharply acute apices..... *P. powellii*
   2. Involucral bracts arranged in 3-5 unevenly graduate series, green or pinkish, their apices not sharply acute.....(3)
3. Rosettes arising from thin rhizomatous processes; Chihuahua. .....*P. pooleanus*
3. Rosettes arising from a thickened, mostly woody, branched root system; Coahuila, New Mexico, Texas.....(4)
   4. Leaves mostly linear-lanceolate to linear-oblanceolate with acute apices; ligules with apical lobes ca. 0.5 mm long; New Mexico, Texas.....*P. parvus*
   4. Leaves mostly oblanceolate to spathulate with obtuse to rounded apices; ligules with apical lobes 1.0-1.5 mm long; Coahuila.....*P. mojadanus*

ACKNOWLEDGMENTS

I am grateful to Gayle Turner for the Latin diagnosis, and to her and Ted Delevoryas for reviewing the manuscript.

LITERATURE CITED

Powell, A.M. 1969. Taxonomy of *Perityle* Benth. (Compositae-Peritylinae) I. Section *Pappothrix* A. Gray. Rhodora 71:58-93.

Powell, A.M. 1973. Taxonomy of *Perityle* section *Laphamia* (Compositae-Heleniеae - Peritylinae). Sida 2:61-128.

Turner, B.L. 1992. Two new cliff-dwelling species of *Pinaropappus* (Asteraceae, Lactuceae) from northern México. Phytologia 73:261-263.

Phytologia (February 1996) 80(2):104-107.

A NEW SPECIES OF *CONOCLINIUM* (ASTERACEAE, EUPATORIEAE) FROM MEXICO

Thomas F. Patterson

Department of Botany, University of Texas, Austin, Texas 78713 U.S.A.

Present address: Biology Department, South Texas Community College, 3201 W. Pecan Blvd., McAllen, Texas 78501 U.S.A.

ABSTRACT

A new species, ***Conoclinium mayfieldii*** T.F. Patterson, is described and illustrated from northern México.

KEY WORDS: Asteraceae, Eupatorieae, *Conoclinium*, México, systematics

Research in the preparation of a revision of *Conoclinium* has revealed a heretofore undescribed species.

Conoclinium mayfieldii T.F. Patterson, *spec. nov.* Figure 1. TYPE: MEXICO. Tamaulipas: Sierra de Tamaulipas, Tres Piedras Canyon, xeric pine-oak ridge on intrusive igneous rock, along trail to Los Cerritos, 740 m, near 23° 12′ N, 98° 15′ W, 7 Oct 1993, *M. Mayfield & T.F. Patterson 7308* (HOLOTYPE: TEX!; Isotypes: F!,GH!,MEXU!,MICH!).

Conoclinio dissecto A. Gray similis sed foliis tantum crenatis vel lobatis (vs. dissectis), receptaculis pubescentibus (vs. glabris), et capitulis minoribus (6-8 mm altis vs. 8-10 mm) differt.

Reclining suffruticose herbs to 7 dm high. Branches few, arising from the caudex, unbranched to capitulescence, striate, sparsely to densely pilose. Leaves opposite; 2-4 cm long, 1-3 cm wide; petioles three-nerved, 5-20 mm long, basal leaf margin long-decurrent with petiole; blades ovate to broadly ovate, crenate to lobed margins, glandular punctate beneath, pilose, especially along veins. Heads 6-15, 5-8 mm wide, 6-8 mm high, arranged in tight subumbellate clusters. Involucre hemispheric, tips even with lobes of mature corolla; the bracts 25-35, in 3 series,

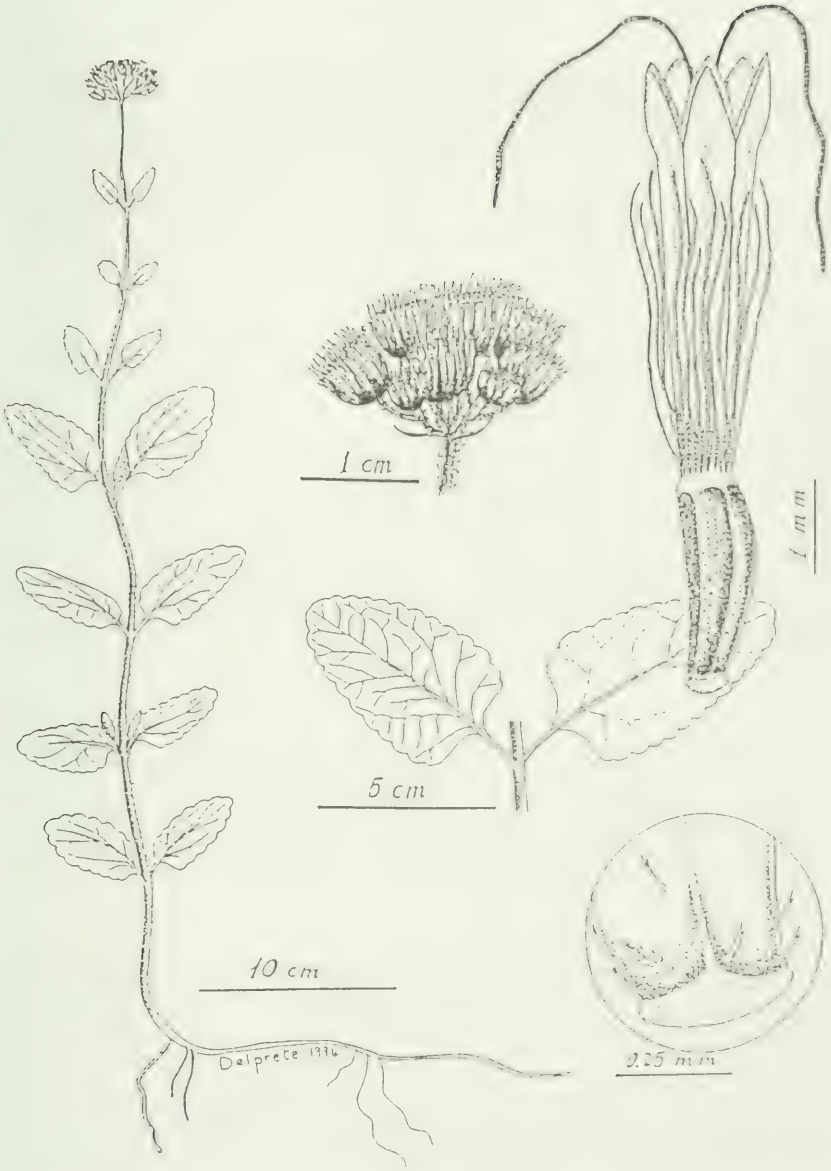


Figure 1. *Conoclinium mayfieldii* from holotype.

herbaceous, subequal, lanceolate, 4-6 mm long, 0.5-0.6 mm wide, rigid with two costae running the length of the bract and connecting at the apex to form an acute point, puberulous to pilose, margins of innermost bracts ciliate with glandular hairs. Receptacle conical, pubescent, with sockets surrounded by lignified ridges. Florets 60-90, corollas blue to lavender, funnelform, 3-4 mm long, the lobes 5 with papillae on outer and inner surface, usually longer than wide. Achenes prismatic, black, sparingly hispidulous, 5-angled, 1.8-2.2 mm long, the carpopodia a poorly developed basal rim; pappus of about 25 bristles, 3-4 mm long, antrorsely barbed, the barbs rounded at the apex of bristle.

ADDITIONAL COLLECTIONS EXAMINED: MEXICO. Chihuahua: Mpio. Ocampo, Cascada de Basaseachic, 20 Oct 1986, *Nesom & Vorobik 5636* (TEX); Cascada de Basaseachic, 1 Oct 1989, *King & Peterson 9884* (F,GH); Yepachic, 19 Sep 1971, *Pennington 170* (TEX). Durango: 34 mi W of C. Durango in Arroyo Mimbres, Jun 1950, *Maysilles 7078* (MICH); Arroyo Los Mimbres, 19 Oct 1993, *Patterson 7467* (TEX); W de Sta. Ma. de Ocotan, Arroyo Mezquital, 16 Oct 1984, *Gonzalez & Acevedo 1548* (TEX). Tamaulipas: Sierra de Tamaulipas, 14 km N el Ejido El Cabrito, 5 Nov 1986, *Martinez 1468* (TEX); Sierra de Tamaulipas, Juan Tomas, E of Las Yucas, 13 Oct 1957, *Dressler 2385* (GH,MICH); Cerro La Pinosa above Juan Tomas, 6 Oct 1993, *Mayfield & Patterson 7281* (TEX); Sierra de Tamaulipas, Cerro Borrado, 8 Oct 1993, *Mayfield & Patterson 7362* (TEX); Sierra Borrado, 23 Jul 1957, *Dressler 1973* (GH); Camino de Cd. Victoria al Ejido El Molino, 30 km W of Victoria, 23 Sep 1985, *Yanez 461* (TEX); SW of Victoria on S.L.P. Hwy 101 E of La Libertad, 10 Oct 1993, *Mayfield & Patterson 7393* (TEX); El Mirador near Hidalgo, Tamaulipas, *Hinton et al. 25030* (TEX).

Conoclinium mayfieldii is distinctive in its pubescent receptacle. *Conoclinium betonicifolium* (Miller) King & Robinson, *C. coelestinum* (L.) DC., and *C. dissectum*, all have glabrous receptacles. The new species is most similar to *C. dissectum*, both possessing hispidulous achenes and floral parts in the same size range, but differs in having leaves not dissected, the already mentioned pubescent receptacle, and the lobes of the mature corolla not extending well above the tips of the involucral bracts.

Conoclinium mayfieldii occurs in pine-oak forest on mountain slopes frequented by fog in the Sierra de Tamaulipas, Sierra Madre Oriental, and Sierra Madre Occidental. Its very local occurrences in both Sierra Madres suggest a much wider distribution in the geologic past.

It gives me great pleasure to name this species for my field-companion and fellow graduate student, Mark H. Mayfield. It was during our 1993 trip to the Sierra de Tamaulipas that I first saw the new species in the field.

ACKNOWLEDGMENTS

Thanks go to Guy Nesom for the Latin diagnosis, and to Piero Delprete for the illustration of the holotype. I thank Billie Turner and Justin Williams for review of the manuscript. Appreciation is expressed to the curators of the following herbaria from which collections were borrowed: F, GH, MICH, TEX.

Phytologia (February 1996) 80(2):108-114

NEW LEGUMINOSAE RECORDS FROM AGUASCALIENTES, MEXICO

Ma. Elena Siqueiros Delgado

Departamento de Biología, Centro Básico, Universidad Autónoma de Aguascalientes, Avenida Universidad s/n, Aguascalientes, Ags., 34000, MEXICO

ABSTRACT

A floristic study of the family Leguminosae from Aguascalientes, México was done. One hundred and nine species were recorded, from them 44 resulted in new records for this locality. Habitat and distribution data from each taxon is mentioned.

KEY WORDS: New Records, Leguminosae, legumes, Aguascalientes, México

RESUMEN

Se llevó a cabo un estudio florístico de la familia Leguminosae en Aguascalientes, México. Se registraron 109 especies, de ellas 44 resultaron ser nuevos registros para esa localidad. Se mencionan datos adicionales sobre hábitat y distribución para cada taxón.

PALABRAS CLAVE: nuevos registros, Leguminosae, legumbres, Aguascalientes, México

INTRODUCTION

Legumes are significantly important to humans. The family Leguminosae is an important feeding source to man and animals in general, besides they are variably used in the industry, particularly in the state of Aguascalientes, México. There are cultivated grains as well as a great variety of wild species which are used by the people for several purposes. We could mention a couple of livestock species: *Eysenhardtia polystachya* Sarg. (varaduz) and *Dalea bicolor* H.B.K. (engordacabra). Medicinal ones are *Zornia thymifolia* Kunth (hierba de la vibora) and *Crotalaria pumila* Ort.

(tronador) mentioned by García (1989). *Leucaena esculenta* (DC.) Benth. (temachaca) and *Lysiloma acapulcense* (Kunth) Benth. (guache) are being used for food, while *Erythrina flavelliformis* and *Lupinus* sp. are ornamentals. In other respects, the vegetation of Aguascalientes is constituted by a high percentage of legumes, especially the thorny scrub in the North and Central parts of the State.

Aguascalientes State is located at the center of the Mexican Republic, between the North Latitude of 21° 38′ 03″ and 22° 07′ 06″ and West Longitude of 101° 03′ 09″ and 103° 00′ 51″. It is limited by Zacatecas on the north, east and west sides, and by Jalisco southward. It has 5589 square km divided into nine municipios (counties): Aguascalientes, Asientos, Calvillo, Cosío, Jesús María, Pabellón de Arteaga, Rincón de Romos, San José de Gracia, y Tepezalá (Figure 1). It has a little rough topography composed of a great central plain with some elevations and a reduced mountain region in the northwest. The altitude goes from 1570 to 2900 m. The climate of this area can be considered inside of half dry group [BS] with some variant (Anónimo 1981b), and the predominant soils are arid soils proper from arid regions (Bolio, *et al.* 1970).

Aguascalientes is conformed by xerophytic vegetation, predominantly a secondary thorny scrub in most of its territory. In the NW part, in the mountain region of the State, it is possible to find *Quercus* and *Pinus* forests, while at the SW there is a small region covered by tropical scrub. In addition, it is possible to find small areas of grassland in regular or poor condition. Confined to the top of the higher mountains there exists *Arctostaphylos pungens* H.B.K. scrub (De la Cerda, *et al.* 1985).

The family Leguminosae in Aguascalientes was first studied by León Cazares (1970) who reported *Acacia berlandieri* Benth., *A. cochiliacantha*, *A. constricta* A. Gray, *A. macilenta* Rose, *A. tortuosa*, *Mimosa biuncifera* Benth., *M. minutifolia* B.L. Robins. & Greenm., *M. monancistra*, and *Prosopis juliflora*. Correll & Johnston (1970) reported *Dalea brachystachya* A. Gray and *Phaseolus metcalfei* Woot. & Standl. Hernández (1982, 1986, 1989) mentioned *Erythrina montana* Standl. and *Zapoteca media* (Mart.) H.M. Hern. for the subtropical region of the State. Anónimo (1981a) made a mention of *Mimosa monancistra*, *Dalea filiciformis* B.L. Robins. & Greenm., and *Phaseolus metcalfei*. Standley (1920) reported *Mimosa monancistra*, *Eysenhardtia punctata* Pennell, and *Dolicholus macrocarpus* Rose. The most important contributors are Rzedowski (1972, 1979, 1988) who cited *Astragalus coriaceus* Hemsl., *A. hypoleucus* Schauer, *Calliandra eriophylla* Benth., *Crotalaria pumila*, *Dalea bicolor*, *D. erythrorhiza* Greenm., *D. lutea*, *D. prostrata*, *Eysenhardtia polystachya*, *Trifolium goniocarpum*, *Vicia pulchella*, *Lupinus bilineatus*, and *Prosopis laevigata* (Willd.) M.C. Johnst. Finally the most important contribution to the legume flora of the State was that of McVaugh (1987) who reported 67 taxa for Aguascalientes.

As a consequence of the fragmentary information existent to date, we considered the necessity of making an inventory of legumes from Aguascalientes, in order to know more about their distribution inside the State, to evaluate their actual condition, and to observe some aspects regarding each species habitat. In the process, we found 44 records or legumes not previously reported from Aguascalientes.

MATERIALS AND METHODS

Specimens used in this study were from two sources: our own fresh collections made during two consecutive years, covering the entire state of Aguascalientes, and the complete legume collections of dried specimens belonging to the Herbaria at UAA and MEXU (México). In addition, several legume specialists were consulted to corroborate the species determinations of some difficult specimens.

The methodology used was the one proposed by Lott & Chiang (1986), the same used in any floristic study. The material identification was made with the help of the following references: McVaugh (1987), Barneby (1964, 1977), Rzedowski (1979), Standley (1920), Standley & Steyermark (1946), Vines (1960), Isley (1973, 1975, 1981), and Correll & Johnston (1970).

RESULTS

One hundred and nine species of legumes were determined during this study, of which 44 resulted in new records for the State of Aguascalientes (Table 1).

DISCUSSION

The most complete report of legumes from Aguascalientes before the present study was that of McVaugh (1987), in which the 67 species represents 55% of the 109 species found in this study. Meanwhile, the isolated reports of legumes mentioned above constitute only another 4.5%. As a consequence, the remainder of species never before mentioned for Aguascalientes correspond to 40.5% of the current list.

These new records are generally distributed in inaccessible, conserved places, far from urban centers or occasionally near small population centers. Those plants not distributed as above are often abundant, so familiar as weeds, that botanists apparently did not pay attention to them.

Most of the new records belonging to the subfamily Papilionoideae, are annual plants with abundant populations, present in a short period of time annually (*e.g.*, *Phaseolus* spp., *Cologania* spp., *Crotalaria* spp.); other plants are scarce and difficult to find at first sight (*e.g.*, *Coursetia caribaea* (Jacq.) Lavin var. *caribaea*, from one collection site in tropical scrub, and *Dalea confusa* (Rydb.) Barneby var. *exandra* Barneby, restricted to high marshlands in association with *Isoetes montezumae* A.A. Eaton at 2550 m. The genera *Desmodium* and *Lupinus* have been less studied in México and we experienced difficulty in their taxonomic determinations. This difficulty in their determinations makes their collection not very attractive and often ignored.

TABLE 1. New records of Leguminosae from Aguascalientes.

SPECIES	DISTRIBUTION	HABITAT
SUBFAMILY MIMOSOIDEAE		
Acacia acatlensis Benth.	3	1e
Albizia plurijuga (Standl.) Britt. & Rose	3	1e
Calliandra grandiflora (L'Her.) Benth.	3	1e
Calliandra humilis Benth. var. *humilis*	8,9	1a,2d
Desmanthus pumilus (Schult.) Macbr.	5,8	1a,2d
Leucaena esculenta (DC.) Benth.	3	1e
Lysiloma acapulcense (Kunth) Benth.	3	1e
Lysiloma microphyllum Benth.	3	1e
Mimosa benthamii Macbr.	3	1e
Mimosa zygophylla A. Gray	9	1c,d
SUBFAMILY PAPILIONOIDEAE		
Astragalus guatemalensis Hemsl. var. *brevidentatus* (Hemsl.) Barneby	8	2a,c
Astragalus jaliscensis (Rydb.) Barneby	3,8	2a,c
Cologania biloba (Lindl.) Nicholson	8	2
Cologania broussonetii (Balbis) DC.	1,3,8	2
Cologania jaliscana S. Wats.	3,5,8	2
Coursetia caribaea (Jacq.) Lavin var. *caribaea*	3	1e
Crotalaria rotundifolia var. *vulgaris* Windler	8	2c
Dalea capitata S. Wats. var. *capitata*	9	1c
Dalea confusa (Rydb.) Barneby var. *exandra* Barneby	8	7
Dalea polygonoides A. Gray	8	2c
Desmodium aparines (Link.) DC.	5,8	2a,c
Desmodium grahamii A. Gray	5,8	1d,2
Desmodium prehensile Schlecht.	3,7	1e,4
Desmodium procumbens (Mill.) Hitchc.	5,8	4
Desmodium aff. *pringlei* S. Wats.	1	1a
Desmodium aff. *volubile* (Schindl.) Schubert & McVaugh	3	1e
Indigofera montana Rose	5	4,3
Lotus orobioides (H.B.K.) Ottley	3	2a,c
Lotus repens (Don.) Standl. & Steyerm.	8	2c
Lupinus aff. *leptocarpus* Benth.	8	2d
Macroptilum atropurpureus (DC.) Urban.	3,5	1
Medicago lupulina L.	1	7
Medicago polymorpha L.	1,4	4

TABLE 1. (cont.).

SPECIES	DISTRIBUTION	HABITAT
SUBFAMILY PAPILIONOIDEAE (cont.)		
Melilotus alba Desr.	6	4
Melilotus indica (L.) All.	1,6,7	4,7
Phaseolus coccineus L.	3	1e
Phaseolus grayanus Woot. & Standl.	8	2a,c,e
Phaseolus ritensis Jones	5,8	1a,2a
Trifolium amabile H.B.K.	3,8	4,2a
Vicia sativa L.	7	5
SUBFAMILY CAESALPINOIDEAE		
Chamaecrista nictitans (L.) Moench. var. *jaliscensis* (Greenm.) Irwin & Barneby	3	1e
Chamaecrista serpens Greene var. *wrightii* (A. Gray) Irwin & Barneby	1,3	1e,2a
Conzattia multiflora (B.L. Rob.) Standl.	3	1e
Hoffmannseggia glauca (Ort.) Eifert.	1,4,9	1a,b,c
Senna bauhinioides A. Gray	1,9	1a,c,d

Distribution (municipios of the state of Aguascalientes): 1. Aguascalientes, 2. Asientos, 3. Calvillo, 4. Cosío, 5. Jesús María, 6. Pabellón, 7. Rincón de Romos, 8. San José de Gracia, 9. Tepezalá.
Vegetation: 1. Scrub: a-thorny, b-subthorny, c-inerme, d-subinerme, e-subtropical; 2. Forest of: a-*Quercus*, b-*Pinus*, c-*Quercus-Pinus*, d-*Pinus-Quercus*, e-*Juniperus*; 3. Grassland; 4. Disturbed vegetation; 5. Agriculture; 6. Riparian vegetation.

On the other hand, most of the species belonging to the subfamily Mimosoideae which were reported as new records, are characteristic trees from the tropical scrub. This type of vegetation is being decreased day by day because of conversion of the area for agriculture (citris and guava plantations). *Acacia acatlensis* and *Calliandra grandiflora* are some of the scarce trees, only found in conserved areas of this region. The same situation exists with *Conzattia multiflora* (subfamily Caesalpinoideae) an uncommon tree, known only from its site collection. Nevertheless, other trees are a dominant part of the landscape in this type of vegetation. Here we can mention *Leucaena esculenta, Lysiloma acapulcense, Lysiloma microphyllum*, and *Albizia plurijuga*. *Mimosa zygophylla* is located only in Tepezalá and Asientos, over xero-calcareous soils common in the north of the country and in these municipios of Aguascalientes. In the same region, *Senna bauhinioides* and *Hoffmannseggia glauca* (subfamily Caesalpinoideae) were collected.

In conclusion, it is possible to mention that Aguascalientes is probably not offering new discoveries to science, given its geographic situation. In fact, few botanic expeditions had occurred specifically on its mountainous region, making some slopes interesting for botanists at present.

ACKNOWLEDGMENTS

I acknowledge the species determinations of *Desmodium* and *Lupinus* by Dr. R. McVaugh; *Phaseolus, Macroptilium*, and *Cologania* by A. Delgado; *Calliandra, Zapoteca*, and *Erythrina* by Dr. H. Hernández; *Crotalaria* by C. Soto; *Ramireziella* by H. Ochoterena; and *Tephrosia* by O. Telles. Special thanks are given to Y. Herrera-Arrieta for reviewing and translating to English this manuscript. I also thank the facilities received in the consultation of MEXU specimens.

REFERENCES

Anónimo. 1981a. Las Leguminosas del Estado de México. Gobierno del Estado de México. Dirección de Recursos Naturales. México, D.F., México

Anónimo. 1981b. Sínteis Geográfica de Aguascalientes. Secretaría de Programación y Presupuesto. México, D.F., México 98 pp.

Barneby, R.C. 1964. Atlas of North American *Astragalus*. Vol. 13 Part I and II. Memoirs of the New Botanical Garden. Bronx, New York.

Barneby, R.C. 1977. *Dalea* Imagines. Vol. 27. Memoirs of the New York Botanical Garden. Bronx, New York.

Bolio, A.E., J.M. de la Puente, R. Moncallo, & S. Villa. 1970. Estudio de la Vegetación Forestal del Estado de Aguascalientes. Inventario Nacional Forestal. México.

Correll, D.S. & M.C. Johnston. 1970. *Manual of the Vascular Plants of Texas*. Texas Research Foundation. Renner, Texas. 1881 pp.

de la Cerda, L.M. & M.E. Siqueiros. 1985. Estudio Ecológico y Florístico del Estado de Aguascalientes. Programa de Investigaciones Biológicas. Centro Básico, U.A.A. Aguascalientes, Ags. México. 69 pp.

García, R.G. 1989. Plantas Medicinales de San José de Gracia. U.A.A. Aguascalientes, Ags. México. 106 pp.

Hernández, H. 1982. Female sterility in *Erythrina montana*. Erythrina Simposium IV. Allertonia 3(1).

Hernández, H. 1986. *Zapoteca*: A new genus of Neotropical Mimosoideae. Ann. Missouri Bot. Gard. 73:755-862.

Hernández, H. 1989. Systematics of *Zapoteca* (Leguminosae). Ann. Missouri Bot. Gard. 76:781-862.

Isley, D. 1973. Leguminosae of the United States: I. Subfamily Mimosoideae. Memoirs of the New York Botanical Garden Vol. 23(1):1-152.

Isley, D. 1975. Leguminosae of the United States: II. Subfamily Caesalpinoideae. Memoirs of the New York Botanical Garden Vol. 25(2):I-VIII, 1-168.

Isley, D. 1981. Leguminosae of the United States: III. Subfamily Papilionoideae. Tribes Sophoreae, Podalyrieae, Loteae. Memoirs of the New York Botanical Garden. Vol. 25(3):1-264.

León Cazares, J.M. 1970. Estudio Ecológico de los Pastizales del Estado de Aguascalientes. Tesis Doctoral, UNAM. México, México.

Lott, A. & F. Chiang. 1986. Manual de Herbario, Consejo nacional de la Flora de México. 1a. Edición. México, D.F., México

McVaugh, R. 1987. *Flora Novo Galiciana.* Vol. 5, Leguminosae. The University of Michigan Press, Ann Arbor, Michigan. 786 pp.

Rzedowski, J. 1972. Notas sobre la Flora del NE del Estado de Aguascalientes. Escuela Nacional de Ciencias Biológicas, México. 19:31-43.

Rzedowski, J. 1979. Flora Fanerogámica del Valle de México. Vol. I. Editorial Continental. México. México. 403 pp.

Rzedowski, J. 1988. Análisis de la distribución geográfica del complejo *Prosopis* (Leguminosae, Mimosoideae) en Norte América. Acta Botánica de México. 3:7-19.

Standley, P.C. 1920. Trees and Shrubs of Mexico. Contr. U.S. Nat. Herb. 23:1-1721.

Standley, P.C. & J.A. Steyermark. 1946. Flora of Guatemala. Fieldiana: Botany. Vol. 24. Part V. Chicago Natural History Museum.

Vines, R.A. 1960. *Trees, Shrubs and Woody Vines of the Southwest.* University of Texas Press. Austin, Texas. 1033 pp.

Phytologia (February 1996) 80(2):115-117.

THE GENUS *LIABUM* (ASTERACEAE, LIABEAE) IN THE DOMINICAN REPUBLIC AND HAITI

B.L. Turner

Department of Botany, University of Texas, Austin, Texas 78713 U.S.A.

ABSTRACT

Liabum in the Dominican Republic and Haiti is treated as having but a single variable species, *L. poiteaui* (Cass.) Urb. The seven other names of *Liabum* proposed for this region are treated as synonyms.

KEY WORDS: Asteraceae, Liabeae, *Liabum*, Haiti, Dominican Republic, systematics

LIABUM Adanson

Perennial herbs or shrublets. Leaves simple, mostly bicolored, opposite, usually connate, often forming a nodal disk; petioles usually winged; blades broadly ovate to elliptical, 3-nervate from or near the base, the margins serrate. Heads campanulate, one to numerous in a rather open or congested capitulescence. Involucres campanulate to broadly turbinate, 5-6 seriate, the bracts ovate (outermost series) to lanceolate, graduate, persistent. Receptacle with bristly chaff or strongly alveolate. Ray florets 20-120 or more, usually in 2 or more series, the ligules linear and yellow. Disk florets 10-80+, the corollas yellow. Achenes small, prismatic, ca. 10-ribbed, hispidulous, the inner pappus of 15-40 white or tawny bristles. Base chromosome number, x=9.

Type: *Liabum brownei* Cass. [= *L. umbellatum* (L.) Sch.-Bip.]

According to Robinson (1983), a genus of perhaps 37 species, most of these found in South America. A single highly variable species occurs in the Dominican Republic and Haiti. Robinson (1983) recognized six species as occurring in this region, but all of these appear to be but forms of *Liabum poiteaui*.

LIABUM POITEAUI (Cass.) Urb., Ark. Bot. 23A:87. 1931. BASIONYM: *Andromachia poiteaui* Cass., Bull. Soc. Philom. 184. 1817. TYPE: HAITI. "in via ad Barriere Couchant," *Poiteaui s.n.* (P, not examined).

Liabum domingense Rydb., Fl. N. Amer. 34:290. 1927. TYPE: DOMINICAN REPUBLIC: near Constanza, Santa Domingo, 1400 m, *Tuerckheim 3113* (HOLOTYPE: NY!).

Liabum subacaule Rydb., Fl. N. Amer. 34:290. 1927. TYPE: HAITI: Between Petit Borgne and Mount Casse, *Nash 502* (HOLOTYPE: NY!).

Liabum barahonense Urban, Arkiv. Bot. 23A:85. 1931. TYPE: DOMINICAN REPUBLIC: prov. Barahona near Paradis, 150 m, *Tuerckheim 2785* (Isotype: NY!).

Liabum oblanceolatum Urb. & Ekman, Arkiv. Bot. 23A:89. 1931. TYPE: DOMINICAN REPUBLIC: Santo Domingo, Prov. de la Vega, Cordillero Central, "in scopulosis umbrosis Valle Nuevo ad rivulum", 2400 m, *Ekman H. 13827* (HOLOTYPE: S, not examined).

Liabum ovatifolium Urb., Arkiv. Bot. 23A:89. 1931. TYPE: DOMINICAN REPUBLIC: Santo Domingo, Prov. Espaillat, near Moca, "in colonia Jamao locos saxosis", 900 m, *Ekman H.12578* (HOLOTYPE: S, not examined).

Liabum polycephalum Urb. & Ekman, Arkiv. Bot. 23A:88. 1931. TYPE: HAITI: Massif de la Hotte, near Torbec above Lie-Mare-Proux, 900 m, *Ekman H. 5346* (Isotype: NY!).

Liabum selleanum Urb., Arkiv. Bot. 23A:86. 1931. TYPE: HAITI: "Massif de la Selle in decivibus Morne Cabaio", 1950 m, *Ekman H. 1548* (Isotype: NY!).

After examination of a large suite of specimens of *Liabum* from Haiti and the Dominican Republic (GBSD,NY,LL,TEX), I conclude that there is but a single highly variable species on the island concerned, this being *Liabum poiteaui*, the earliest available name for the aggregate. Urban, in his recognition of that species (among many others!), noted that Rydberg's acceptance of *L. cubense* Rydb. as occurring in Haiti was a misidentification of forms referable to *L. poiteaui*. I concur with this assessment.

Finally, I should note that a broader species concept than that espoused here might show that *Liabum umbellatum* (L.) Sch.-Bip. will encompass *L. poiteaui*, but my cursory examination of a wide range of Caribbean material suggests otherwise.

This research was occasioned by my early efforts to "work up" the genus *Liabum* for the Dominican Republic. This has now been superseded by a more ambitious study over a broader region by others.

ACKNOWLEDGMENTS

I am grateful to my colleague Ted Delevoryas and Justin Williams for reviewing the paper.

REFERENCES

Robinson, H. 1983. A generic review of the tribe Liabeae (Asteraceae). Smithsonian Contr. Bot. 54:1-66.
Rydberg, P.A. 1927. Liabeae, in N. Amer. Fl. 34:289-301.

Phytologia (February 1996) 80(2):118-120.

A NEW SPECIES OF *GENTIANA* (GENTIANACEAE) FROM NUEVO LEON, MEXICO

B.L. Turner

Department of Botany, University of Texas, Austin, Texas 78713 U.S.A.

ABSTRACT

A new species of *Gentiana*, ***G. hintoniorum*** B.L. Turner, from Nuevo León, México, is described and illustrated. It belongs to the sect. *Pneumonanthe* and relates to *Gentiana laevigata*, the latter known only from the Mexican states of Chiapas and Oaxaca.

KEY WORDS: Gentianaceae, *Gentiana*, México, Nuevo León, systematics

GENTIANA HINTONIORUM B.L. Turner, *spec. nov.* Figure 1. TYPE: MEXICO. Nuevo León: Mpio. Aramberri, Cerro Viejo, 2435 m, pine-oak forest, 19 Nov 1993, *Hinton et al. 23961* (HOLOTYPE: TEX!).

Similis *G. laevigatae* Mart. & Gal. sed tubis calycum fississimis (vice non fissorum) et corollis parvioribus, ca. 2 cm longis (vice 2.5-4.0 cm longis).

Perennial herbs ca. 25 cm high. Stems reddish, minutely hispidulous, the vestiture 0.1 mm high or less. Leaves opposite throughout, gradually reduced upwards. Midstem leaves linear-lanceolate to subfalcate, entire, 2-3 cm long, 0.3-0.4 cm wide, uninervate, pubescent like the stem, especially along the margins and midrib. Flowers arranged in terminal spike-like racemes 3-13 cm long, the pedicels 4-12 mm long. Bracts at base of calyx 2, linear-lanceolate, 6-10 mm long, ca. 0.5 mm wide. Calyces 8-12 mm long, tubes 5-7 mm long with a lateral sinus 3-4 mm deep; lobes 5-6, linear-lanceolate, 2-4 mm long. Corollas blue, ca. 2 cm long; lobes 5, broadly ovate, apiculate, between these, 1-2 appendages 2-3 mm long. Stamens 5, ca. 18 mm long, glabrous; anthers yellow, ca. 2 mm long, basally attached, or nearly so. Capsules (immature) ca. 18 mm long, glabrous; beak ca. 1.5 mm long; stigmas two, ca. 0.8 mm long, sharply recurved.

This species belongs to the sect. *Pneumonanthe* of *Gentiana* and, except for its deeply cleft calyx, would key to or near *G. laevigata* in Pringle's (1977) treatment of the Mexican species of this section. The latter, so far as known, occurs only in the Mexican states of Chiapas and Oaxaca.

Figure 1. *Gentiana hintoniorum* B.L. Turner, from holotype.

It is a pleasure to name this apparently localized endemic for the Hinton family, who continue to garner a remarkable array of endemic plants from northeastern México.

ACKNOWLEDGMENTS

I am grateful to Gayle Turner for the Latin diagnosis, and to her and Ted Delevoryas for reviewing the paper. Maria Thompson provided the illustration.

LITERATURE CITED

Pringle, J.S. 1977. Taxonomy and distribution of *Gentiana* (Gentianaceae) in México. Sida 7:174-217.

Phytologia (February 1996) 80(2):121-127.

COMMENTS ON PLANT SPECIES ADDED TO THE FLORA OF TEXAS FROM EL PASO COUNTY WITH MORE ADDITIONS

Richard D. Worthington

Floristic Inventories of the Southwest Program, P. O. Box 13331, El Paso, Texas 79913 U.S.A.

ABSTRACT

Plant taxa recently added to the flora of Texas from El Paso County are listed and those for which little was published other than presence are discussed. New additions to the flora of Texas are *Malacothrix sonorae* Davis & Raven and *Spartium junceum* L. Problematic locality data for records of *Mimulus rubellus* A. Gray and *Physalis acutifolia* (Miers) Sandwith are discussed and new records presented.

KEY WORDS: Texas, El Paso County, floristics

In the mid-1970's, an intense floristic survey was started for the Franklin Mountains, El Paso County, Texas, and surrounding areas. In the course of that survey, a number of species were added to the known flora of Texas (Correll & Johnston 1970) and others thought to be a part of the flora were documented for the first time. Some discoveries have been reported elsewhere and include the following (family acronym and reference given):

Telosiphonia brachysiphon (Torr.) Henr.	APO Henrickson 1996
Baccharis sarothroides A. Gray	CMP Worthington 1990a
Filago californica Nutt.	CMP Worthington 1990a
Prenanthella exigua (A. Gray) Rydb.	CMP Worthington 1990b
Stylocline micropoides A. Gray	CMP Worthington 1990a, 1990b
Arabis perennans S. Wats.	CRU Rollins 1993a, 1993b
Brassica tournefortii Gouan.	CRU Lemke & Worthington 1991; Rollins 1993a, 1993b
Chorispora tenella (Pallas) DC.	CRU Lipscomb 1984
Diplotaxis tenuifolia (L.) DC.	CRU Spellenberg, *et al.* 1986
Lepidium latifolium	CRU Worthington 1990a
Sisymbrium orientale L.	CRU Rollins 1993a, 1993b

Streptanthus carinatus Wright subsp. *arizonicus* (S. Wats.) Kruckeberg, Rodman, & Worthington	CRU Kruckeberg, Rodman, & Worthington 1982
Mirabilis commata (Small) Standl.	NYC Turner 1993

Collections of the species added to the Texas flora and of those precisely documented for the first time have been deposited at UTEP and one or more of the following herbaria: TEX, SRSC, NY, and UCR. Johnston (1990) has noted most of these, mentioning them in his update, and Worthington (1989) has included most of them in his El Paso County checklist. However, details of the nature of the occurrences in Texas have not yet been reported for many of them. In this report the collection localities and other information about the species are presented and other species are reported for the first time.

APOCYNACEAE

TELOSIPHONIA BRACHYSIPHON (Torr.) Henr.

This species was recently found in the Franklin Mountains on a granite rock outcrop in a canyon bottom 1.1 air mi. NE from the top of Anthony's Nose (near 31° 58′ 10″ N, 106° 29′ W), 4800 ft., 19 Jul 1995, *Worthington 25068* (Henrickson 1996). This collection represents a significant range extension from extreme southwestern New Mexico. This population is restricted to crevices in an outcrop of granite rock measuring no more than 50 m square.

ASTERACEAE

HYMENOTHRIX WISLIZENII A. Gray

Turner (1962) cited an 1881 Vasey collection from the county that lacked specific locality data. Correll & Johnston (1970) state "not definately known to occur in Texas . . . to be expected in the El Paso area." A significant population occurs on the east side of the Franklin Mountains at 4300 ft. elevation on igneous rock derived soils (generally near 31° 54′ 15″ N, 106° 27′ 25″ W), 11 Jun 1978, *Worthington 2953*, 08 Jul 1978, *Worthington 3061*. Another population was located at the Three Sisters Hills at 4100 ft. elevation on a mixed igneous and limestone alluvial substrate (near 31° 52′ N, 106° 33′ 30″ W), 15 Sep 1988, *Worthington 17406*.

MALACOTHRIX SONORAE Davis & Raven

This species was collected in the Franklin Mountains 1.1 air mi. ENE from the top of North Franklin Mountain (near 31° 54′ 13″ N, 106° 28′ 30″ W), 5000 ft., in a steep-walled granite rock canyon, *Worthington 24701*. This is a significant range extension to Texas from the nearest known population in the Tres Hermanas Mountains, Luna County, New Mexico (Spellenberg *et al.* 1986).

BRASSICACEAE

ARABIS PERENNANS S. Wats.

This species of *Arabis* is now known from a number of localities on the east side of the Franklin Mountains mostly from igneous rock substrates (granite and rhyolite) or from mixed igneous and limestone alluvium at elevations of 4600-5500 ft. Specific localities are: 1.6 mi. WNW jct. Trans-Mountain Rd. with Gateway North-South (31 54′ 17″ N, 106° 28′ W), 11 Mar 1979, *Worthington 3980*; 1.1 air mi. NNE from the top of Anthony's Nose (31° 58′ 26″ N, 106° 29′ 28″ W), 4 Mar 1979, *Worthington 3919*; 1.5 air mi. NNE from the top of Anthony's Nose (31° 58′ 45″ N, 106° 29′ 25″ W), 4 Mar 1979, *Worthington 3920*; Mundy's Spring (31° 55′ 10″ N, 106° 29′ 15″ W), 10 May 1981, *Worthington 7036*; 0.1 mi. E of McKelligon Canyon Theatre parking lot, 19 Mar 1978, *Worthington 2287*.

SISYMBRIUM ORIENTALE L.

This species has become established on disturbed sites on the west side of El Paso. It has been found in the spring on scraped lots, roadsides, and dumped dirt at 4000-4100 ft. elev. (El Paso at the corner of Ressler and Escondido, Mar 1980, *Worthington s.n.*; lot on the NW side of El Paso, 9 May 1985, *Worthington 13101*; El Paso at the Three Sisters Hills, 19 Apr 1992, *Worthington 20561*).

CRASSULACEAE

SEDUM COCKERELLII Britt.

Uhl (1972) reports that the species occurs in the Davis Mountains in Madera Canyon at 5800 ft. and gives a chromosome count of $n = 15$. One collection made by the author from above Limpia Creek east of Mt. Livermore was sent to the late Robert J. Clausen as a live specimen and was confirmed to be this species. Presumably, the species has been collected many times in the Davis Mountains, but not prepared in a

way that makes determination certain. One collection from the Franklin Mountains is also this species (0.5 air mi. NE from top of North Franklin Mountain, 6600 ft., N-facing metamorphic rock cliff, 13 Oct 1984, *Worthington 12748*).

FABACEAE

LOTUS HUMISTRATUS Greene

This winter annual occurs on the east side of the Franklin Mountains on granite derived soils (0.9 air mi. WNW jct. Trans-Mountain Rd. with Gateway North/South (31° 54′ 13″ N, 106° 27′ 22″ W), 4300 ft. elev., *Worthington 4182*.

SPARTIUM JUNCEUM L.

This ornamental shrub, native to Europe, is now widely cultivated in El Paso County and probably elsewhere in Texas. It commonly escapes from cultivation and becomes established on vacant lots, roadsides, and arroyos. One voucher collection is from the 5400 block of North Mesa in El Paso, where it was found growing on a scraped lot (*Worthington 19254*, 8 May 1991).

PORTULACACEAE

TALINUM LONGIPES Woot. & Standl.

This species has been collected several times at high elevations (6250-6400 ft.) on North Franklin Mountain (0.7 mi. NW from the top of North Franklin Mtn., 10 Sep 1978, *Worthington 3464*; 0.5 mi. NE of the top of North Franklin Mtn., 27 Aug 1988, *Worthington 17079*).

SCROPHULARIACEAE

MIMULUS RUBELLUS A. Gray

Correll & Johnston (1970) include this species in the flora of Texas stating that it occurs in "moist and wet places in extreme west Texas." The basis for the inclusion appears to be the mentioning of the collection made by Thurber (*# 135*) in the "Hueco Mountains" in the original description (Torrey 1858). Unfortunately, the data on the Thurber collection do not give a specific locality or even mention the state in which it was collected. It is most likely that Thurber made this collection on igneous substrate in the Texas part of the Hueco Mountains, but the possibility exists that it was

collected in New Mexico. Two recent collections of this taxon in the Franklin Mountains of El Paso County, document this species as part of the Texas flora. The first collection was from 0.7 air mi. NNW from the top of North Franklin Mountain on fine talus at 6000 ft., (31° 54′ 45″ N, 106° 29′ 50″ W), 13 May 1995, *Worthington 24760*. The second was found 0.7 mi. SE from the top of North Franklin Mountain (near 31° 53′ 50″ N, 106° 29′ W), about 5900 ft., also on finer grain igneous talus, *Worthington 24829*.

SOLANACEAE

PHYSALIS ACUTIFOLIA (Miers) Sandwith

Gray (1875) described *Physalis wrightii* A. Gray, now considered a synonym of *P. acutifolia*, from a collection made by Charles Wright (*# 1602*), allegedly from "prairies along the San Pedro River, southwestern Texas." Waterfall (1958) in his monograph of *Physalis*, accepted the data on the label of the type as correct, but found no additional Texas collections, and cited only "recent" collections from California and Arizona. Correll & Johnston (1970) followed Waterfall, noting that the species was known from Texas, but only from the one early collection.

Apparently the label on the type collection is in error due to the fact that Wright collected along two San Pedro Rivers. Early in his trip, Wright collected along the Devil's River in Texas, at that time known as the San Pedro River (Hartmann 1992). Late in his trip, he traveled to the San Pedro River in Arizona, where he actually collected the type of *Physalis wrightii* S of Benson. Additional evidence to this error is the high Wright collection number, the later years on the label (1851-1852), and the mention of "prairie" which is absent from the Devil's River in Texas.

The species has been collected twice recently in El Paso County (Three Sisters Hills near 31° 52′ N, 106° 33′ 30″ W, 4100 ft., arroyo of mixed igneous and limestone alluvium, 4 Sep 1988, *Worthington 17196*; 0.3 mi. W of the Borderland Bridge across the Rio Grande at 31° 53′ 15″ N, 106° 36′ W, 3760 ft., 27 Aug 1978, irrigation ditch along field, *Worthington 3239*). West of El Paso this species is often an abundant weed in old fields. Nesom (pers. comm.) searched the collection at TEX and found one sheet from Cameron County that appears referable to the species, but is worthy of a closer look (*Runyon 4243*, 11 Jul 1943).

ZYGOPHYLLACEAE

ZYGOPHYLLUM FABAGO L.

Johnston (1990) references D.M. Porter (pers. comm., 1980) to the occurrence of this species as an adventive weed in El Paso County. Hatch, *et al.* (1990) state its

occurrence in the Trans-Pecos is doubtful. The species occurs along the Rio Grande levee road 0.7 road miles WNW of the Vinton Road bridge (SW of Anthony) in the extreme western tip of Texas and El Paso County (*Worthington 4733*, 4 Jul 1979; *Worthington 5889*, 4 May 1980).

ACKNOWLEDGMENTS

I wish to express my thanks to the following individuals who either reviewed duplicate collections sent to them or made determinations: R.W. Kiger, G. Nesom, A.M. Powell, R. Rollins, B.L. Turner, and the late R.J. Clausen.

LITERATURE CITED

Correll, D.S. & M.C. Johnston. 1970. *Manual of the Vascular Plants of Texas.* Texas Research Foundation, Renner, Texas.

Gray, A. 1875. Synopsis of North American species of *Physalis.* Proc. Amer. Acad. Arts 10:62-68.

Hartmann, C.P. 1992. Charles Wright, botanizer of the boundary. Password 37:55-70, 171-187.

Hatch, S.L., K.N. Gandhi, & L.E. Brown. 1990. Checklist of the vascular plants of Texas. Texas Agricultural Experiment Station Publ. MP-1655, College Station, Texas.

Henrickson, J. 1966. Studies in *Macrosiphonia* (Apocynaceae): generic recognition of *Telosiphonia.* Aliso 14(3):179-195.

Johnston, M.C. 1990. *The Vascular Plants of Texas. A List Up-dating the Manual of the Vascular Plants of Texas.* 2nd Ed. Published by the author, Austin, Texas.

Kruckeberg, A.R., J.E. Rodman, & R.D. Worthington. 1982. Natural hybridization between *Streptanthus arizonicus* and *S. carinatus* (Cruciferae). Syst. Bot. 7(3):291-299.

Lemke, D. & R.D. Worthington. 1991. *Brassica* and *Rapistrum* (Brassicaceae) in Texas. Southw. Naturalist 36(2):194-197.

Lipscomb, B. 1984. New additions or otherwise noteworthy plants of Texas. Sida 10(4):326-327.

Rollins, R.C. 1993a. *The Cruciferae of Continental North America.* Stanford University Press, Stanford, California.

Rollins, R.C. 1993b. Brassicaceae (Cruciferae): mustard family. *In*: Hickman, J.C., (Ed.). *The Jepson Manual. Higher Plants of California.* University of California Press, Berkeley, California. pp. 392-448.

Spellenberg, R, R. Worthington, P. Knight, & R. Fletcher. 1986. Additions to the flora of New Mexico. Sida 11(4):455-470.

Torrey, J. 1858. Botany of the Boundary. *In*: Emory, W.H. *United States and Mexican Boundary Survey.* U.S. Government Printing Office, Washington, D.C. pp. 29-270.

Turner, B.L. 1962. Taxonomy of *Hymenothrix* (Helenieae, Compositae). Brittonia 14:101-120.

Turner, B.L. 1993. The Texas species of *Mirabilis* (Nyctaginaceae). Phytologia 75:432-451.

Uhl, C.H. 1972. Intraspecific variation in chromosomes of *Sedum* in the southwestern United States. Rhodora 74:301-320.

Waterfall, U.T. 1958. A taxonomic study of the genus *Physalis* in North America north of Mexico. Rhodora 60:152-173.

Worthington, R.D. 1989. An annotated checklist of the native and naturalized flora of El Paso County, Texas. El Paso Southwest Botanical Miscellany No. 1:1-56.

Worthington, R.D. 1990a. Additions to the flora of Texas from El Paso County. Sida 14(1):135-137.

Worthington, R.D. 1990b. Effects of El Paso pollutants on the lichen, moss, and winter annual flora on andesite rock formations. *In*: Ganster, P. & H. Walter, eds. *Environmental Hazards and Bioresource Management in the United States-Mexico Borderlands*. Los Angeles: UCLA Latin American Center Publications, Los Angeles, California. pp. 105-115.

Phytologia (February 1996) 80(2):128-132.

A NEW SPECIES OF *AGERATINA* (ASTERACEAE, EUPATORIEAE) FROM JALISCO, MEXICO

B.L. Turner

Department of Botany, University of Texas, Austin, Texas 78713 U.S.A.

ABSTRACT

A new species, ***Ageratina jocotepecana*** B.L. Turner, is described and illustrated from Jalisco, México. It belongs to the *A. mairetiana* complex and is distinguished by its very large broadly deltoid leaves which are subcordate at the base. A map showing the distribution of the four closely related members of this complex in Jalisco is provided.

KEY WORDS: Asteraceae, Eupatorieae, *Ageratina*, México, systematics

Routine identification of Mexican Asteraceae has revealed the following novelty. It belongs to the *Ageratina mairetiana* (DC.) King & H. Rob. species complex as conceived by Turner (1987) a group characterized by its biseriate pappus, the outer bristles much shorter than the inner.

AGERATINA JOCOTEPECANA B.L. Turner, *spec. nov.* Figure 1. TYPE: MEXICO. Jalisco: Mpio. Jocotepec, Cerro Viejo, "antes de llegar a la cima - (Bola del Viejo) subiendo por Zapotitan - de Hidalgo." ca. 2650 m, 5 Mar 1989, ***M. Cházaro B. et al. 5871*** (HOLOTYPE: TEX!).

Similis *A. lasioneurae* (Hook. & Arn.) King & H. Rob. sed foliis late deltatis cum basibus subcordatis, costis infra, dense glanduliferis-pubescentibus ubique, et achenibus cum pilis plerumque effusis (vice acheniorum atomiferorum-glanduliferorum).

Stiffly erect perennial herbs 1.6-2.0 m high. Stems submaculate to tannish, densely glandular-hirsute just below the capitulescence, glabrate with age. Leaves opposite throughout, mostly 10-20 cm long, 6-10 cm wide, not much reduced

Figure 1. *Ageratina jocotepecana*, from holotype.

Figure 2. Distribution of *Ageratina mairetiana* complex in Jalisco (excluding *A. cerifera*): *A. mairetiana* var. *mairetiana* (closed circles); *A. m.* var. *elucens* (open circles); intermediate to var. *mairetiana* and var. *elucens* (half circle); *A. lasioneura* (open triangles); *A. jocotepecana* (open squares). Based upon material at LL, TEX.

upwards; petioles 3-6 cm long; blades deltoid to subcordate, 5-7 palmately nervate from or near the base, the margins irregularly dentate, glandular-pilose beneath, especially along the major veins. Heads arranged 5-10 in axillary bracteate clusters, the ultimate peduncles 5-15 mm long. Involucres campanulate; bracts 2-seriate, subequal, 8-12 mm long, glandular-pubescent with short hairs, the apices acute to acuminate. Florets 50-80 per head (estimated); corollas white, 5-6 mm long, glabrous or nearly so; tube ca. 3 mm long; lobes ca. 0.8 mm long, acute, glabrous (rarely 1 or 2 short hairs). Achenes cylindric, ca. 4 mm long, moderately hispid throughout; pappus of 30-40 white bristles about 7 mm long, below these an outer series of fewer, shorter, bristles 1-3 mm long.

ADDITIONAL SPECIMENS EXAMINED: MEXICO. Jalisco: Mpio. Jocotepec, "Vereda por la cresta a la Bola del Viejo", oak woodlands, 2100-2850 m, 5 Feb 1987, *Machuca N. 5449* (WISC); Mpio. Tecolotlán, Sierra de Quila, Cerro Huehuentón, ladera SE, ca. 2300 m, 4 Feb 1990, *Guerrero N. 654* (TEX).

The very broad deltoid blades, subcordate at the base, having lower surfaces with midveins densely glandular-pubescent, readily distinguishes this taxon from *Ageratina lasioneura*. In addition, it can be distinguished from the latter by the densely glandular-pubescent branches of its capitulescence (vs. eglandular and tomentose). Nearly similar leaf forms to those of *A. jocotepecana* occur elsewhere in Jalisco (*e.g.*, Mpio. Venustiana Carranza, *Villa C. 668* [TEX]), but otherwise such plants have all of the characters of *A. lasioneura*. It should also be noted that both *A. jocotepecana* and *A. lasioneura* occur on Cerro Huehuentón, flower at about the same time (e.g., *Guerrero N. 656* [TEX]), but intergrades between them have not been detected.

Two of the above cited specimens (TEX), including the type, were included in my broad concept of *Ageratina lasioneura* (Turner 1987). I still maintain *Eupatorium chapalense* S. Wats. as synonymous with *A. lasioneura*, although the former approaches *A. jocotepecana* in having broadly ovate leaves and pubescent achenes. It differs from *A. jocotepecana*, however, in possessing eglandular pubescence and leaves with blades merely obtuse or rounded at the base. McVaugh (1984) suggested that such plants might prove distinct; if recognized, the *A. mairetiana* complex (excluding *A. cerifera* [McVaugh] H. Robins.) in Jalisco would include at least four named taxa (*A. mairetiana* var. *mairetiana*, *A. mairetiana* var. *elucens*, *A. lasioneura*, and *A. jocotepecana*) as shown in Figure 2.

ACKNOWLEDGMENTS

I am grateful to Gayle Turner for the Latin diagnosis, and to her and Ted Delevoryas for reviewing the manuscript. Maria Thompson provided the illustration.

LITERATURE CITED

McVaugh, R. 1984. *Eupatorium*, in *Flora Novo-Galiciana* 12:240-424. University of Michigan Press, Ann Arbor, Michigan.

Turner, B.L. 1987. Study of the *Ageratina mairetiana* complex (Asteraceae-Eupatorieae). Phytologia 63:417-427.

Phytologia (February 1996) 80(2):133-139

TAXONOMIC STUDY OF THE *COREOCARPUS ARIZONICUS - C. SONORANUS* (ASTERACEAE, HELIANTHEAE) COMPLEX

B.L. Turner

Department of Botany, University of Texas, Austin, Texas 78713 U.S.A.

ABSTRACT

Coreocarpus arizonicus and *Coreocarpus sonoranus* are closely related, relatively common elements of the Sonoran Desert of northwestern México. Both are quite variable and relatively few characters serve to distinguish between them. Study of a wide range of specimens from the area concerned suggests that within *C. arizonicus* four intergrading morphogeographical infraspecific elements can be identified: var. *arizonicus*, var. *pubescens*, var. *filiformis*, and var. ***sanpedroensis*** (E.B. Smith) B.L. Turner, *comb. & stat. nov.* Within *C. sonoranus* two infraspecific taxa are recognized: var. *sonoranus* and var. ***libranus*** B.L. Turner, *var. nov.* The latter is known only from Sierra Libre, Sonora. A key to the taxa concerned is provided, along with distribution maps, and comments upon their regional variability.

KEY WORDS: Asteraceae, Heliantheae, *Coreocarpus*, México, Arizona, systematics

Coreocarpus is a relatively small genus largely confined to the Sonoran Desert regions of northwestern México. Smith (1989) recognized *Coreocarpus* as having nine species, but two of these were subsequently transferred to the genus *Bidens* by Melchert (Melchert & Turner 1990); even with these two removals the genus appears paraphyletic, for at least two additional species retained in *Coreocarpus*, *C. congregatus* (S.F. Blake) E.B. Smith and *C. insularis* (Brandegee) E.B. Smith, would appear to have their relationships elsewhere. At least one would place in *Coreocarpus* only four species: *C. dissectus* (Benth.) S.F. Blake, *C. parthenioides* Benth., *C. arizonicus*, and *C. sonoranus*. All of these have monomorphic involucral bracts, except for an occasional 1 or 2 much reduced bractlets at the base of the involucre. This has been amply discussed by Smith. Those taxa removed from the genus by Melchert & Turner (1990) have a double involucre, as in *Coreopsis* or *Bidens*. Turner (1991) described an additional species of *Coreocarpus* from near Mexico City, (*C. ixtapanus* B.L. Turner) which he took to be a sister species of *C. congregatus*, noting

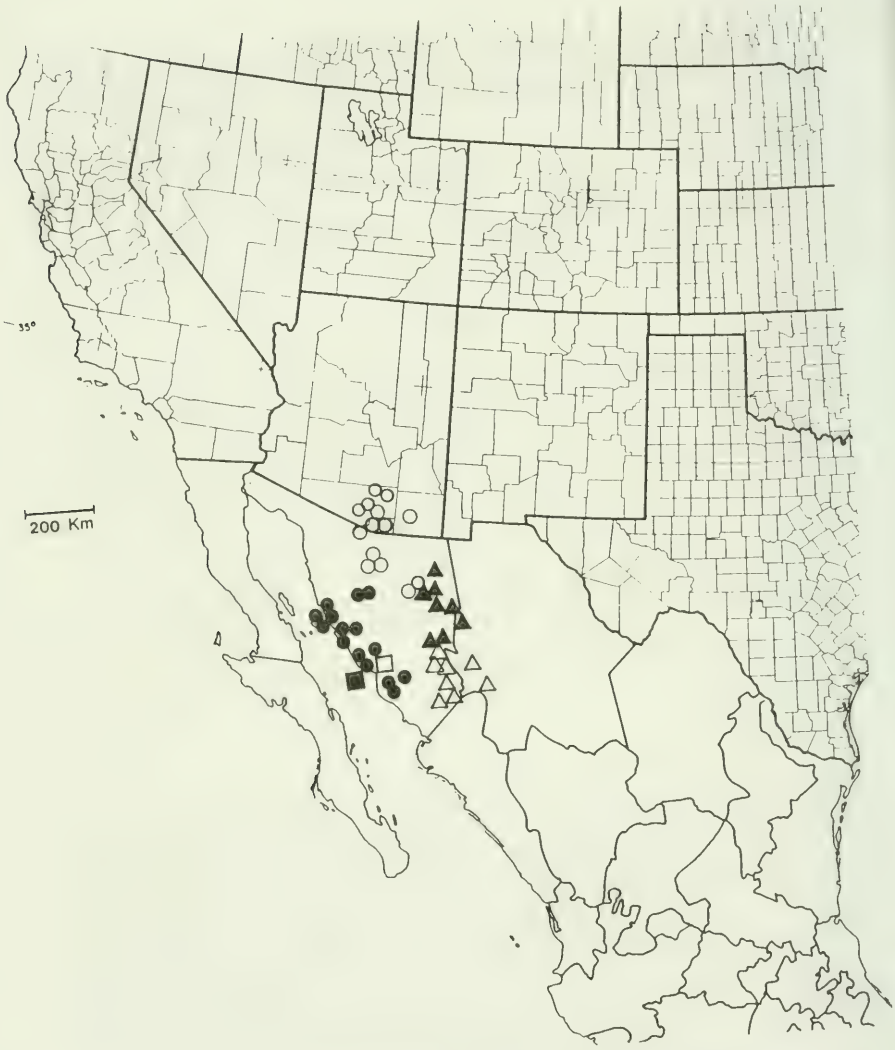


Figure 1. Distribution of *Coreocarpus arizonicus* - *C. sonoranus* complex: *C. arizonicus* var. *arizonicus* (open circles); *C. a.* var. *pubescens* (closed triangles); *C. a.* var. *filifolius* (open triangles); *C. a.* var. *sanpedroensis* (closed square); *C. sonoranus* var. *sonoranus* (closed circles); *C. s.* var. *libranus* (open square).

that both of these were questionably placed in *Coreocarpus*. Smith (1991) promptly sunk *C. ixtapanus* into synonymy with his enlarged concept of *C. insularis*. But the question remains: do the taxa concerned belong to *Coreocarpus*, phyletically speaking?

The impetus for the present paper has been occasioned by difficulties with two species of *Coreocarpus*, *C. arizonicus* and *C. sonoranus*. The two are largely distinguished by a syndrome of characters, but best identified by leaf shape, as noted below, and even the latter is subject to considerable variation upon occasion. This has been compounded by much infraspecific variation in both taxa, so much so that I refer to these two taxa in this paper as the *C. arizonicus* - *C. sonoranus* complex.

The following key will distinguish among members of the *Coreocarpus arizonicus* - *C. sonoranus* complex, as recognized here.

1. Leaves with their ultimate divisions variously ovate to deltoid, not at all linear (except on immature growth of secondary shoots); rays yellow or white..... .....2. *C. sonoranus*
   2. Foliage glabrous or nearly so; lateral divisions of the leaf with sinuses extending to the mid-lines or nearly so; widespread but not in Sierra Libre..... .....2a. var. *sonoranus*
   2. Foliage moderately to densely pubescent throughout; lateral divisions of the leaf with sinuses not extending to mid-lines; Sierra Libre, Sonora (ca. 78 km N of Guaymas). ..... 2b. var. *libranus*
1. Leaves with their ultimate divisions mostly linear to linear-lanceolate; rays mostly yellow, occasionally white..... 1. *C. arizonicus*
   3. Involucres mostly 3-5 mm high; achenes with reduced corky marginal enations; Isla San Pedro. ..... 1d. var. *sanpedroensis*
   3. Involucres mostly 5-6 mm high; achenes with well-developed corky wings and/or marginal enations; not on Isla San Pedro.
      4. Foliage moderately and evenly pubescent throughout; pappus bristles mostly present.....1b. var. *pubescens*
      4. Foliage glabrous or nearly so; pappus bristles mostly absent, rarely present.
         5. Ultimate divisions of leaves relatively short, mostly 2-3(-4) cm long; southern Arizona and closely adjacent Sonora, México. ....1a. var. *arizonica*
         5. Ultimate divisions of leaves relatively long and slender, mostly 3-6 cm long; southern Sonora, México and closely adjacent Sinaloa..... ..... 1c. var. *filiformis*

1. *COREOCARPUS ARIZONICUS* (A. Gray) S.F. Blake, Proc. Amer. Acad. Arts 49:344. 1913.

As noted in the above key four varieties are recognized within this taxon, as follows:

1a. *COREOCARPUS ARIZONICUS* (A. Gray) S.F. Blake var. *ARIZONICUS*

My concept of this taxon is essentially the same as that rendered by Smith (1989), with the exclusion of *Coreocarpus arizonicus* var. *filiformis* and *C. arizonicus* var. *macrophyllus*, which I would include in my concept of *C. arizonicus* var. *filiformis*, the latter distinguished by its mostly larger leaves with longer, more linear, divisions, as suggested by its epithet.

Collections of var. *arizonicus* are nearly always glabrous or nearly so in the U.S.A., but in northeastern Sonora var. *arizonicus* grades into var. *pubescens*. Indeed, a case could readily be made for the recognition of but a single widespread highly variable species without infraspecific categories, but this would deny the morphogeographical patterns portrayed in Figure 1.

1b. *COREOCARPUS ARIZONICUS* (A. Gray) S.F. Blake var. *PUBESCENS* (B.L. Rob.) Fern., Proc. Amer. Acad. Arts 49:344. 1913.

My concept of this taxon is about the same as that of Smith (1989). It is only weakly differentiated from var. *arizonicus*, intermediates between these not uncommon in areas of contiguity, as noted in the above.

1c. *COREOCARPUS ARIZONICUS* (A. Gray) S.F. Blake var. *FILIFORMIS* (A. Gray) S.F. Blake, Proc. Amer. Acad. Arts 49:344. 1913.
Leptosyne arizonicus var. *filiformis* Greenm. (1904). TYPE: MEXICO. Sinaloa: 80 km NE Choix (LECTOTYPE [selected by Smith 1989]).
Coreocarpus arizonicus (A. Gray) S.F. Blake var. *macrophyllus* Sherff (1935). TYPE: MEXICO. Chihuahua: "southwestern Chihuahua".

Smith (1989) included this taxon in his broad concept of *Coreocarpus arizonicus* var. *arizonicus*, but I think it to be as distinctive, if not more so, than var. *pubescens*, which he maintained. It is seemingly equally close to *C. sanpedroensis*, hence my reduction of the latter, as follows:

1d. ***COREOCARPUS ARIZONICUS*** (A. Gray) S.F. Blake var. ***SANPEDROENSIS*** (E.B. Smith) B.L. Turner, *comb. & stat. nov.* BASIONYM: *Coreocarpus sanpedroensis* E.B. Smith, Amer. J. Bot. 72:262. 1985.

This is a very weakly differentiated infraspecific element of *Coreocarpus arizonicus* and were it not confined to the Isla de San Pedro, likely not to have been recognized. Smith (1989) distinguished it from *C. arizonicus* by its achenes which are said to have margins which are corky and involute, dissected into separate teeth, albeit "highly reduced to nearly obsolete in *C. sanpedroensis*." My examination of numerous achenes of var. *arizonicus* and var. *sanpedroensis* suggest that the differences between the two are mostly quantitative: var. *sanpedroensis*, in general,

has somewhat smaller heads with somewhat smaller achenes having somewhat less well-developed marginal enations, otherwise they are scarcely different.

2. *COREOCARPUS SONORANUS* Sherff, Bot. Gaz. (Crawfordsville) 97:604. 1936.

Two infraspecific categories are reorganized under this species, as follows:

1. Foliage glabrous; sinuses of leaves extending to or near their mid-lines; pappus awns mostly absent, sometimes present; widespread in western Sonora. .... 2a. var. *sonoranus*
1. Foliage markedly pubescent; sinus of leaves not extending to their midlines; pappus awns mostly present; Sierra Libre, Sonora. ..... 2b. var. *libranus*

2a. *COREOCARPUS SONORANUS* Sherff var. *SONORANUS*
Coreocarpus johnstonii Sherff (1936)
Coreocarpus shrevei Sherff var. *latilobus* Sherff (1935)

Except for the inclusion of material referable to my newly described var. *libanus* (cf. below), this taxon is aptly described by Smith (1989). He notes that *Coreocarpus johnstonii* and *C. sonoranus* were described at the same time, but he selected the latter as the most desirable name since he considered *C. johnstonii* to be typified by an ecotypic (coastal) variant.

As can be noted in Figure 1, *Coreocarpus sonoranus* is relatively widespread but, so far as known does not co-occur with *C. arizonicus*. Nevertheless, it is quite variable, both as regards ray color (mostly white, sometimes yellow), and pappus bristles (mostly absent, sometimes present). It is most readily distinguished from *C. arizonicus* by its less linear-dissected leaves, as indicated in my key. Nevertheless, occasional plants with young or immature secondary leaflets may superficially resemble *C. arizonicus*, and it is possible that the two taxa have exchanged genes in the distant past, this perhaps accounting for the occurrence of white and yellow rays in both taxa.

2b. ***COREOCARPUS SONORANUS*** Sherff var. ***LIBRANUS*** B.L. Turner, *var. nov.* TYPE: MEXICO. Sonora: Mpio. Hermansillo, Sierra Libre, Canyon E of Restaurante La Pintata, Cerro Bola, ca. 600 m, 3 Jan 1984, *R.K. & Tom Van Devender 84-36* (HOLOTYPE: TEX!; Isotype: ARIZ!).

Differt a *C. sonorano* Sherff habendo folia minus dissecta, moderate pubescentia, cum sinibus vadosioribus, et achenia plerumque papposa.

Suffruticose perennial herbs 30-50 cm high. Leaves broadly ovate in outline, mostly tripartite-dissected, moderately pubescent, those at midstem mostly 3-6 cm long, 3-4 cm wide; petioles 1.0-2.5 cm long; sinuses of the blade not extending to mid-lines. Heads 1-4, mostly terminal, the ultimate peduncles 1-3 cm long. Involucres pubescent, 5-6 mm high. Ray florets ca. 5; ligules white, 4-8 mm long.

Disk florets 20-40, the corollas yellow. Achenes mostly 3.5-4.0 mm long, the margins beset with 6-9 corky enations; pappus of 2 persistent awns 1-2 mm long, sometimes absent.

ADDITIONAL SPECIMENS EXAMINED: MEXICO. Sonora (all from Sierra Libre): Mpio. Hermansillo, Cerro Bola, 600 m, 18 Apr 1993, *Búrquez 93-030* (LL); near small reservoir in Cañada Las Chivas, 0.1 km SE of cave with paintings, slopes of volcanic rock, 320 m, 16 Nov 1984, *Burgess 6723* (ARIZ); La Pintada Canyon, 9 Nov 1986, *Smith 3972* (TEX); La Pintada Canyon, 7 and 9 Feb, 1978, *Van Devender s.n.* (ARIZ); same locality 1 Jan 1982, *Van Devender s.n.* (ARIZ); same locality, 1 Jan 1983, *Van Devender s.n.* (ARIZ).

This novelty was called to my attention (over protest!) by Dr. Tom Van Devender, who perceived its distinction from the more typical elements of *Coreocarpus sonoranus*. Smith (by annotation, 1986, and publication, 1984) identified most of the specimens cited above as belonging to the latter, but did note on annotations of both the holotype and isotype that the plants were "near *Coreocarpus sonoranus* Sherff, but achenes aristate & plant very pubescent!!" Indeed, *C. sonoranus* var. *libranus*, in my opinion, is as distinct, if not more so, from var. *sonoranus* as is *C. arizonicus* var. *sanpedroensis* from *C. arizonicus* var. *arizonicus*, hence an additional reason for my reduction of *C. sanpedroensis* to varietal status here.

Var. *libranus* receives its name from the Sierra Libre, to which it is apparently endemic. So far as known, var. *sonoranus* has not been collected in this massif. Yetman & Búrquez (1996) have presented an interesting account of Sierra Libre (100-1100 m elevation).

ACKNOWLEDGMENTS

I am grateful to Tom Van Devender of the Desert Museum, Tucson, Arizona for his taxonomic proddings which prompted this study, and to the following herbaria for the loan of specimens: ARIZ, ASU, LL, TEX. These acquisitions were all annotated and served to construct Figure 1. I am grateful to Gayle Turner for the Latin diagnosis, and to her and Ted Delevoryas for reviewing the paper.

LITERATURE CITED

Melchert, T. & B.L. Turner. 1990. New species names and combinations in Mexican *Bidens* (Asteraceae - Coreopsidinae). Phytologia 69:20-25.

Smith, E.B. 1989. A biosystematic study and revision of the genus *Coreocarpus* (Compositae). Syst. Bot. 14:448-472.

Smith, E.B. 1991. *Coreocarpus ixtapanus* B. Turner (Asteraceae - Heliantheae - Coreopsidinae) a synonym of *C. congregatus* (S.F. Blake) E.B. Smith. Phytologia 71:29-30.

Turner, B.L. 1991. A new species of *Coreocarpus* (Asteraceae - Coreopsideae) from México State, México. Phytologia 70:42-43.

Yetman, D.A. & A. Búrquez. 1996. A tale of two species: speculation on the introduction of *Pachycereus pringlei* in the Sierra Libre, Sonora, Mexico by *Homo sapiens*. Desert Plants 1966:23-32.

Phytologia (February 1996) 80(2):140-141.

POUTERIA MALACCENSIS (SAPOTACEAE), NEW TO THAILAND

Pranom Chantaranothai

Department of Biology, Faculty of Science, Khon Kaen University, Khon Kaen 40002, THAILAND

ABSTRACT

Pouteria malaccensis (C.B. Clarke) Baehni, previously known from Malaysia and Sumatra through to New Guinea, is reported from southern Thailand.

KEY WORDS: Sapotaceae, *Pouteria*, Thailand

My study of the Sapotaceae for the Flora of Thailand has revealed the occurrence of *Pouteria malaccensis* (C.B. Clarke) Baehni in Thailand, where it has not hitherto been reported. Both of the collections were made in Klong Na Ka Wildlife Sanctuary, Ranong province, as follows: *C. Niyomdham 1244*, 5 Nov. 1986 (E,L) and *C. Niyomdham, R. Kubat, & W. Aajchomphoo 1441*, 18 Mar. 1987 (BKF,E,L).

Pouteria malaccensis has been collected in relative abundance in Peninsular Malaysia, Sumatra, Riau, Lingga, Sulawesi, and New Guinea (Herrmann-Erlee & Royen 1957; Ng 1972). The nearest known collections to the Ranong locality have been made about 600 kilometers to the south in Pulau Penang, Peninsular Malaysia.

ACKNOWLEDGMENTS

I thank Drs. D. Simpson (K) and M. Newman (E) for their reviews and comments. I also thank the curators of the following herbaria for loans of their material: BKF, E, and L. Thanks to P. Beedle for providing the publication costs.

LITERATURE CITED

Herrmann-Erlee, M.P.M. & P. van Royen. 1957. Revision of the Sapotaceae of the Malaysian area in a wider sense 9. *Pouteria* Aublet. Blumea 8(2):452-509.
Ng, F.S.P. 1972. Sapotaceae. *In*: Whitmore, *Tree Flora of Malaya*. 1:388-439.

Phytologia (February 1996) 80(2):142-143.

CORRECTIONS AND ADDITIONS

Volume 78, issue 3, page 297, line 31, substitute *herbacea* for *herbaceous*.
Volume 78, issue 5, page 358, line 24, substitute *Careya* for *Carea*.
Volume 78, issue 5, page 358, line 28, substitute *azedarach* for *azadirach*.
Volume 78, issue 5, page 358, line 30, substitute *Acacia nilotica* (L.) Willd. *ex* Del. for *Acacia arabica* Willd.
Volume 78, issue 5, page 358, lines 31 and 32, substitute *Sammania saman* (Jacq.) Merr. for *Enterolobium saman* Prain.
Volume 78, issue 5, page 358, line 33, substitute Taub. for Tanb.
Volume 78, issue 5, page 359, line 1, substitute *benghalensis* for *bengalensis*.
Volume 78, issue 5, page 359, line 3, substitute *globulus* for *globulus*.
Volume 78, issue 5, page 359, line 6, substitute *Ziziphus trinervia* for *Zyzyphus trinervi*.
Volume 78, issue 5, page 359, line 15, substitute *disperma* for *disperina*.
Volume 78, issue 5, page 359, add to Acknowledgments: We are gratefully acknowledged to the Department of Science & Technology, Govt. of India, New Delhi, under the scheme of promotion of scientific interest in youth for financial assistance. We also express thanks to the Botanical Survey of India, Calcutta for the authentication of species.
Volume 79, issue 1, page 13, first sentence under *Hedyotis butterwickiae*, should read "This species was first described by Terrell in 1979."
Volume 79, issue 1, page 16, the author provided additional information for this map after the paper had gone to press. The corrected map is shown on the page following this one. Note the hatching representing the range of *Hedyotis nigricans* var. *austrotexana*.
Volume 79, issue 2, page 126, line 26, substitute *Triodanis* for *Trifolium*.
Volume 79, issue 2, page 127, line 10, substitute *Zornia* for *Zornea*.
Volume 79, issue 2, page 130, line 19, substitute *Zornia* for *Zornea*.

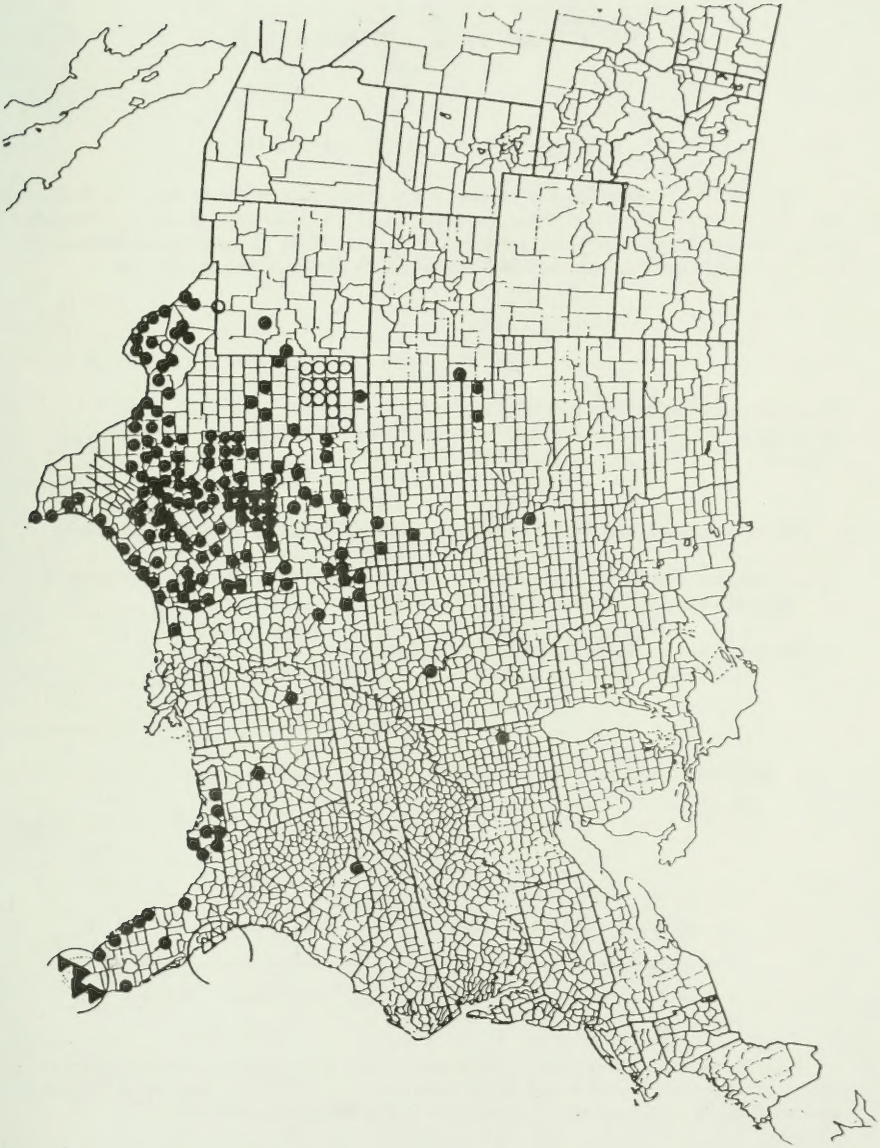


Figure 1. Distribution of *Hedyotis nigricans* in U.S.A.: var. *nigricans* (closed circles); var. *austrotexana* (diagonals); var. *floridana* (closed triangles); var. *papillacea* (open circles); var. *pulvinata* (open triangles).

NOW AVAILABLE, PHYTOLOGIA MEMOIRS, Volume 10

THE COMPS OF MEXICO, Volume 6
TAGETEAE AND ANTHEMIDEAE
B.L. TURNER

1996, 8 1/4 × 10 3/4 in., 97 pp., $29.95, ISBN 0-9642085-1-2.

The first of an anticipated ten volume series on the Asteraceae of México, this volume includes the tribes Tageteae and Anthemideae. Later volumes will include the remainder of the 2700+ species of Asteraceae known from México. The Mexican representatives of the family are particularly rich in the tribes Helenieae, Heliantheae, and Eupatorieae.

Please complete order form and send to:
Phytologia, 185 Westridge Drive, Huntsville, Texas 77340-8916 U.S.A.
Telephone (409) 295-5410; Federal EIN 76-0274455

Please reserve my copy(ies) of PHYTOLOGIA MEMOIRS as indicated below:

_____ copy(ies) Phytologia Memoirs 10; Turner, *The Comps of Mexico, volume 6--Tageteae and Anthemideae* @ $29.95 per copy.....$_____

Shipping/handling ($4.95 first copy [non-U.S.A. addresses $8.95]; $2.85 each additional)..... _____

Subtotal..... _____

Texas residents please add 8.25% sales tax..... _____

Total $_____

Ship to: _____

_____

_____

_____

All orders payable in advance in U.S. dollars, free of any service charges. Shipping rates quoted are for surface delivery, allow 4-6 weeks for delivery in the U.S., longer overseas. For air shipping, remit an additional $8.40 per copy to U.S. addresses, or $16.20 to overseas addresses.

THANK YOU.

Information for Authors

Articles from botanical systematics and ecology, including biographical sketches, critical reviews, and summaries of literature will be considered for publication in PHYTOLOGIA. Manuscripts may be submitted either on computer diskette, or as clean typescript. Diskettes will be returned to authors after action has been taken on the manuscript. Diskettes may be 5.25" or 3.5" and may be written in any IBM or Macintosh compatible format. Typescript manuscripts should be single spaced and will be read into the computer using a scanner. The scanner will read standard type fonts but will not read dot matrix print. Manuscripts submitted in dot matrix print cannot be accepted. Use underscore (not italics) for scientific names. Language of manuscripts may be either English or Spanish. Figures will be reduced to fit within limits of text pages. Therefore, figures should be submitted with internal scales. Legends for figures should be included in figures whenever possible. Each manuscript should have an abstract and key word list. Specimen citations should be consistent throughout the manuscript. Serial titles should be cited with standard abbreviations. References cited only as part of nomenclatural summaries should not appear in Literature Cited. Nomenclatural work should include one paragraph per basionym and must provide proper (as defined by the current *International Code of Botanical Nomenclature*) citation of sources of epithets and combinations.

Authors should arrange for two workers in the appropriate field to review the manuscript before submission. Copies of reviews should be forwarded to the editor with the manuscript. Manuscripts will not be published without review.

Cost of publication is currently $13.00 US per page for publication without reprints. Publication with 100 reprints is provided for $18.00 US per page, 200 reprints for $21.50 US per page. Page charges are due with manuscript and no paper will be published before payment is received in full. Reprints must be ordered and paid for in advance. Page charges will be determined on the basis of a typeset page. Title page should include title, authors(s) name(s), and address(es). No extra charge is made for line drawings provided they conform to limitations of size and proportion for normal text. Halftones require an extra charge of $14.00 US per page at 100%. Enlargement or reductions cost an additional $6.00 per page.